DOCUMENT RESUME

ED 154 972 RC 010 543

TITLE Indian Health Service Training Center, Training Course TC-70-4 (April 13-May 1, 1970): A Descriptive Analysis of the Utilization of Health Resources in the Zuni, New Mexico Service Unit.

INSTITUTION Public Health Service (DHEW), Washington, D.C. Div. of Indian Health.

PUB DATE 13 Apr 70

NOTE 79p.; Not available in hard copy due to marginal legibility of original document

EDRS PRICE MF-$0.83 Plus Postage. HC Not Available from EDRS.

DESCRIPTORS *American Indians; *Attitudes; Birth Rate; Child Care; Clinics; Community Health Services; Diseases; Family Planning; *Health Facilities; *Health Services; Immunization Programs; Patients (Persons); *Preventive Medicine; Proximity; Questionnaires; *Use Studies

IDENTIFIERS Indian Health Service; *New Mexico (Zuni); Ramah Navajos; Zunis

ABSTRACT

A descriptive study of health services utilization patterns, and possible factors contributing to such patterns, was conducted in April 1970 at the Zuni, New Mexico, Indian Health Service Unit. Health service utilization was explored by selected disease categories, preventative services (maternal and child health), and general population attitudes as expressed in a precoded questionnaire. The study group consisted of 121 Zuni, 38 Ramah, and 12 others. Data were obtained from the daily outpatient disease log, hospital inpatient computer data, delivery room log, stork register, inpatient-outpatient combined medical chart, and field health family folder. Findings included: in view of the high incidence of tuberculosis in the Service Unit population, the number of infants receiving PPD skin test was extremely low; 33% of the children had 2 or less well-child visits over the entire study period; 21% of all mothers did not have pre-natal care; postpartum examinations were received by 64% of Zuni and Ramah women; contraceptive methods were used by 36% of the mothers; 18% of the outpatient workload at the Zuni Hospital was attributable to non-Zuni residents; the Ramah utilized significantly less preventive services on a per capita basis; waiting time was found to be a significant factor preventing the utilization of health services. Among the recommendations were that there should be active ruboela immunization and PPD skin testing of all preschool children and additional field clinics. (NQ)

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INDIAN HEALTH SERVICE TRAINING CENTER

TRAINING COURSE TC-70-4

APRIL 13-MAY 1, 1970

A DESCRIPTIVE ANALYSIS OF THE UTILIZATION OF HEALTH RESOURCES IN THE ZUNI, NEW MEXICO SERVICE UNIT

RC010543

COVER DESIGN

ZUNI WATER JAR

Colors: Slip, clear white kaolin, which darkens with age. It does not extend quite to the base of the jar, the lower part being slipped with brown or black. Decorations in black with touches of red.

Design: The surface to be decorated is laid off in sections, usually two or four, each of which contains a unit design, such as a deer, bird, or rosette. The neck has a smaller, geometrical pattern of its own. It is separated from the body by a band, often a double black line, which must always be broken at a joint, as a "spirit path." Otherwise, the belief is that the maker's soul would be imprisoned and she might die.

Shape: Zuni Water Jars are made on a bowl foundation and often show a bulge where the sides spread out beyond this. Zuni specialized in the pottery owl, though all pueblos made bird forms.

History: Zuni pots have kept to the old style more nearly than many of the others, though they have changed slowly since 1879. Very few are made now.

ABSTRACT

A descriptive study of health services utilization patterns, and possible factors contributing to such patterns, was carried out in April, 1970, at the Zuni, New Mexico, I.H.S. Service Unit. Health service utilization was explored by selected disease categories, preventative services (maternal and child health), and general population attitudes as expressed in an administered questionnaire.

PREFACE

The April, 1970, class in Epidemiology and Health Services Management (TC-70-4), sponsored by the U. S. PHS Indian Health Service was composed of members of various disciplines with representatives from the Indian Health Service, Community Health Representatives Program, and Global Community Health Program.

The course was of three weeks' duration, the first and third of which were spent at the Desert Willow Training Center in Tucson, Arizona. During the second week, the entire class relocated to Gallup, New Mexico, and utilized the Zuni, New Mexico, Pueblo and the Ramah Navajo Reservation (Zuni Service Unit) as the environment of the class field study.

The objectives of the course were:

1. To review systematic management skills and concepts as they may apply to the cooperative planning, implementation, and evaluation of Indian and Alaskan Native community health programs.

2. To highlight multi-agency and multi-disciplined partnership approaches to the identification of Indian and Alaska Native community health problems and to the delivery of health services.

3. To translate systematic management and epidemiological concepts into medical care and public health practices through "learn-by-doing" training experiences.

4. To stimulate continuing interest in advanced learning concerning, and/or increased application of systematic management concepts, epidemiology skills, and partnership approaches to, the delivery of health services.

Rosters of class instructors and class members are found in Appendices 9 and 10.

ACKNOWLEDGMENTS

The participants in the April, 1970, course in Epidemiology and Health Services Management, sponsored by the Indian Health Service express appreciation for cooperation and assistance to the following:

The Zuni and Ramah Navajo Communities, particularly:

Governor Robert Lewis of the Zuni Tribe

Mrs. Dorothy Antonio, Vice Chairmar of the Ramah Navajo Tribe

Mr. Fred Enote, Zuni Tribal Liaison

Mrs. Verna Nastachio, Supervisor of Community Health Representatives (Zuni)

Mrs. Martha Calevasa, Community Health Representative (Zuni)

Mrs. Lillie Mahooty, Community Health Representative (Zuni)

Mr. Lawrence Paselente, Community Health Representative (Zuni)

Mr. Nathaniel Nasheboo, Tribal Councilman (Zuni)

Mrs. Nancy Heino, Field Health Nurse and Interpreter

Mrs. Catherine Erachino, Public Health Clerk and Interpreter

Messrs. Benjamin and Wilcox Martinez, Interpreters

Mrs. Daisey Wilson, Interpreter

The personnel of the Zuni Service Unit, particularly:

William Cumberworth, M.D., Service Unit Director

Mrs. Wynona Wato, Director of Nursing

Mrs. Roberta Arnold, Public Health Nurse

Mrs. Felipita Lasiloo, Medical Records Clerk, Zuni Field Clinic

Mrs. Irene Mamingha and Mrs. Cecilia Ondelazy, Medical Records Clerks, Zuni Hospital

Mr. William Butler, Principal of Zuni Secondary School

Mr. Don Bergstrom, PAS Officer, Albuquerque Area Indian Health Service

The April, 1970, Epidemiology and Health Services Management class would like to extend a special note of gratitude to the Director of the Course, Mr. Irving H. Schlafman, his able assistant, Mrs. Vicki Shulock, to Mr. Robert McKay, Course Preceptor, and to the other faculty members.

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BACKGROUND INFORMATION-ZUNI SERVICE UNIT

The Zuni Service Unit includes the southwestern corner of McKinley County and the western portion of Valencia County, both of which are west of the Continental Divide in the extreme west-central part of New Mexico. The Unit extends from the New Mexico-Arizona border eastward to the Cibola National Forest. The entire area of the Service Unit lies south of Gallup, New Mexico. The Service Unit is composed of two reservations.

The Ramah Navajo Reservation is comprised of 70,000 acres of Tribal land, 47,000 acres of privately owned allotted land and 35,000 acres of leased Federal land approximately 50 miles southeast of Gallup, New Mexico. The Ramah Navajo are a part of the greater Navajo Nation, although they are not geographically connected to the larger Navajo Reservation. These people are very sparsely distributed over an area 30 x 50 miles due to the "checkerboard" pattern of lands which they own individually and as a Tribe.

The Zuni Reservation encompasses 407,447 acres. Zuni Pueblo is among the oldest of Indian villages in the United States which still stands and which continues as an occupied community. Zuni was early discovered in its isolated desert location by Spanish explorers in the 1530's. The Pueblo Indians, even then, were long-time residents of the region, having settled around the Zuni River 800 to 900 years ago.

Zunis were among the Indians whose lands were occupied by Francisco Coronado in the 1540's in his search for the legendary "Seven Cities of Cibola." The present community of Zuni was not one of these early village sites; it was occupied around 1705 and is located across the Zuni River from the site of Halona, one of the Cities of Cibola.

In addition to the Zuni Pueblo and the Ramah Navajo, there are several scattered Navajo families who live between Zuni and Gallup, New Mexico. These families normally receive their health care at Gallup; however, when they present themselves at the Zuni Hospital they are provided with health services.

Population. The latest population figures available (January 1, 1969), indicate that there were approximately 5,200 Zuni people living on the Zuni Reservation and

approximately 1,000 Ramah Navajo. The Tribal leaders and Community Health Representatives state that at the present time there are approximately 5,500 Zuni and 1,100 Ramah Navajo living on their respective Reservations. The population dispersion between these two Reservation Tribes is very different, with the Zuni people largely living in a central village and the Ramah Navajo people widely dispersed throughout their Reservation.

Climate and Topography. The altitude of the Service Unit ranges from 6,000 to 7,000 feet with several great mesa formations, scattered artificial lakes and some land forested with pinon pine and juniper. Rainfall averages from 12 to 16 inches per year with 40% of the total occurring in July and August. The average monthly temperature ranges from 25° F in January to 66° F in July; extremes range from -20° to 95°. The growing season varies from 80 to 100 days. Spring winds, mostly from the west, cause severe dust storms.

Housing and Utilities. Most homes in the Zuni village are stone, adobe and concrete block structures which house large multi-family groups. Water, electricity and sewer services are available throughout the community. Heating and cooking are done with wood collected in the surrounding countryside. The living accommodations provide adequate shelter from the elements but are crowded and allow very little space for family privacy or recreation.

The Ramah-Navajo families reside in hogans, log and mud structures forming a single room with central fire vented through an opening in the roof. The distances between settlements present a great handicap to the provision of adequate sewer, water, electric and telephone services. Most areas still lack these necessities.

Economy. An increasing number of Zuni people are obtaining employment in jobs outside the home and their traditional silversmithing craft. Two new electronic assembly plants located near the Pueblo are employing approximately 150 persons. Others find employment with government service agencies and seasonal work with the railroad and firefighting crews. Cattle-raising and dryland grain farming were important until about a generation ago; since World War II, however, these activities have declined because of land erosion and market conditions. Sheep raising is still practiced extensively by the Indians of the area.

Average Ramah family income is somewhat lower than that of the Zuni Indian and probably is in the range of $800-$1,000 annually. Most Ramah income is derived from the

sale of sheep, wool and craft items. A minority of Navajos have government positions and the railroads continue to provide some seasonal employment for the men.

Transportation and Communication. New Mexico Highway No. 53 crosses the area from east to west and connects with Arizona State Highway No. 61. New Mexico Highway No. 32 runs through the area from Gallup southward. New Mexico Highway No. 36 runs from Zuni southward and eastward to connect with New Mexico Highway No. 32. Other roads are largely dirt and gravel. The closest air, railway, and bus transportation is at Gallup, 40 miles north of Zuni.

Daily mail services are provided in the area; however, there are very few telephones in the area and repair service is difficult to obtain.

Education. Except for the very old, most members of the Zuni Tribe speak English fairly well. Schools are maintained by the County through grade 12 but the dropout rate remains high. Further training for personal improvement has been encouraged by the establishment of outside industry near the Pueblo providing new opportunities without requiring separation from the community and tradition.

Very few Navajos over 45 years of age speak English with any facility. Although school attendance is encouraged, many youngsters receive an inadequate education or are separated from their families in boarding schools.

Religion, Customs and Tradition. Members of the Zuni Tribe are profoundly religious with nearly all social activities centering around religious observances. The religious organization consists of six existing fraternities known as kivas, with each kiva having its own private meeting area. Membership in a kiva is restricted to male members of the Tribe who are initiated around the age of eight. In addition to the kivas, there are 12 medicine societies with the leader of each chosen for life, and ten clans developed through hereditary relationships. These clans are traced through the matrilineal system which is characterized by two traditions: The first is that all land ownership is in the hands of the women; and the second is that when a marriage takes place, the couple moves in with the bride's mother. There are many religious shrines and sacred areas which are greatly respected by the Indians and for which they feel very protective.

Health Problems. The basic health problems of the Service Unit continue to be those of infectious and chronic diseases.

Communicable diseases, such as upper respiratory infections, pneumonia, gastroenteritis, otitis media, bronchitis, influenza and skin infections, remain prevalent among the Indian population. Many of the diseases stem from inadequate sanitation, crowded housing, (an average of over eight persons per home in Zuni), poor water supplies and waste disposal systems and limited facilities for practicing personal hygiene. The high incidence of diabetes mellitus and essential hypertension in these Indian groups are leading causes of morbidity and mortality with their concurrent cardiovascular and neurologic complications.

Alcoholism continues to be a leading problem and contributes markedly to other conditions such as child neglect, chronic diseases and accidents. The three main causes of injury among the Indian population, i.e., motor vehicle accidents, falls and assaults and brawls, frequently are resultant from excessive alcohol usage. Also, the mental health and suicidal patients recognized in the Service Unit are usually a reflection of alcohol abuse. As the incidence of alcoholism increases, these conditions appear to increase correspondingly. Increased professional mental health staff and the development of comprehensive mental health programs are expected to have a positive, long-range impact on the problem of mental illness.

Maternal health problems related to pregnancy are high, although no deaths were reported in this category during the past three years. Most expectant mothers still receive care only late in pregnancy. Postpartum care is readily available and has been accepted by a greater number of mothers during recent years. Increased efforts in health education are expected to improve both prenatal and postpartum care.

Dental diseases are widely prevalent among the Zuni-Ramah Indian population and constitute a problem, particularly among children, as services for this group are inadequate to meet the need for dental care. An average of over four decayed teeth was detected per Indians examined, and only approximately 60% of these teeth were restored. Services for adults are provided in emergencies and limited care is offered to adults during school vacation periods.

The progress made in education for preventive health and sanitation practices has paralleled the changes identified in the disease pattern. Diphtheria, pertussis, measles and other traditional hazards of childhood have all but disappeared from the community.

Home births and unattended deaths have decreased markedly, reflecting the increased desire of the Indian to accept available medical services. Recent emphasis upon increased Indian involvement in the planning and providing of health services is creating a mutual understanding in which the traditional barriers of religion, culture, and language will be minimized. Also, the Community Health Representative Program, which has five representatives and a coordinator, has facilitated communication between IHS Service Unit staff and Indian leadership.

Facilities. The Zuni Service Unit has a general medical, pediatric and obstetric hospital facility of 36 beds and provides outpatient care five days a week with constant 24-hour emergency service. Separate field health clinics are provided for the Zuni Pueblo and the widely scattered Ramah Navajo.

The average daily patient load of 18-20 patients is a comfortable occupancy for the current hospital facility, but busier periods create overcrowded conditions and prohibit the proper observation of privacy and isolation techniques. The outpatient and emergency department is greatly overcrowded and inadequate for the 15,000 visits annually.

The Service Unit facilities and services are available only to Indians, resulting in no medical services for the 700-1000 non-Indians that are a part of the Zuni economic and social community. Limited medical services are available in Gallup (40 miles) and Grants (70 miles); adequate facilities are 155 miles away in Albuquerque. The staff normally includes three medical officers, one dental officer and assistant, one pharmacist, eight registered nurses, and other supportive staff making a total complement of approximately 57 full-time employees.

Referrals. Patients requiring medical or surgical treatment beyond that available at the Zuni Indian Hospital are usually referred to the 200-bed Gallup PHS Indian Hospital, 40 miles north of Zuni. Since only minor surgical operations are performed at the Zuni Hospital, most patients are referred to other facilities for surgery and immediate surgical aftercare. In addition to Gallup, other patients are referred to contract hospitals for proper treatment and care. These patients are transferred from referral hospitals as soon as they are able to be cared for properly at the Zuni Hospital. Since only approximately $11,000 is available annually for contract medical care in the Zuni Service Unit, most of the use of contract funds is limited to use in life threatening emergencies.

Insufficient funds prohibit elective surgery or specialist consultation for contract vendors on a routine basis. In fiscal year 1967, about two-thirds of the 22 contract patients from the Zuni Service Unit were sent to the 179-bed Bernalillo County Medical Center in Albuquerque, 155 miles away.

Specific Background Related To The Epidemiological Study:

To facilitate the study specific background operational information was provided by the Service Unit staff. The following was determined:

1. Follow-up on the Ramah Reservation is considered a major problem due to the considerable distance between families and extremely poor road conditions. At present, there is a clinic held one day a week at the community building on the Ramah Reservation. There are no well-baby or other specialty clinics. The Ramah people are allowed to come to the Zuni Field Clinic for preventive services, but in fact they do not attend. Often immunizations are given at home by the field nurse with a medical doctor's permission.

2. There is no formal well-baby clinic at the Hospital. Newborns are seen at the time of the mother's postpartum visit. Subsequent well-baby clinic visits usually consist of a visit to the clinic for immunizations by the field nurse.

3. The family folder kept at the Field Clinic is considered a cumbersome method of record keeping and often tends to replace the hospital record as far as information relative to preventive services. Preventive services provided should be listed in the hospital chart and hospital visits should be entered in the family folder. Due to the limited staff, this exchange of information is sometimes not accomplished.

4. The Cousin Navajo area falls outside the boundary of the Zuni Service Unit; however, a number of these mothers and newborns come to Zuni for preventive services. The Gallup Service Unit is responsible for field follow-up of the Cousin's Navajo. Communication exists between the Service Units; however, improvement is needed in more adequately coordinating the field and clinic health programs.

PROBLEM IDENTIFICATION

The class elected for study the problem of the lack of information concerning utilization of health resources in the Zuni Service Unit.

Study Topic Justification

In the absence of applicable analytical data, a Service Unit Director is forced to utilize intuitive reasoning to determine the distribution of limited health resources. The Service Unit Director anticipates the arrival of a field health physician in FY 1971. There is limited factual information upon which to base a decision as to maximum utilization of this physician's time. Such a decision might be determined by crude population distribution or by intuitive impressions of need.

The Zuni Service Unit Director and other health personnel at the Service Unit predict that transportation, cultural, communication, and other factors may affect the health care provided the Ramah Navajo population and their utilization of existing health resources.

Interest was expressed by the Tribe and Service Unit staff in obtaining factual information which may prove useful in determining the distribution of existing health resources and upon which planning for future resource needs might be based. The class felt that such a study has very broad application since health personnel in general are forced to determine the distribution of health resources by impressions rather than facts.

Consequently, the study group decided to investigate and describe the present utilization of health facilities in the Zuni Service Unit and possible factors contributing to such utilization.

Scope and Limitation of Study

Factors influencing the utilization of any health service are infinitely variable and numerous. Type of care offered, severity and type of disease, facility location, transportation problems, personal prejudice, economic status, and cultural background are only a few broad categories one could consider.

Due to time limitations and many operational factors, the scope of this study was limited to an examination of utilization of health resources employing three methods described under Methodology. In studies of disease categories, it is obvious that many factors may effect what appears as a simple utilization figure. Hereditary predisposition, cultural beliefs, severity and discomfort connected with any disease, and epidemics in any particular locale might all significantly effect utilization. For example, in a community a long distance from a health center the incidence of pneumonia seen at the center could be very high. One could jump to the conclusion that this is because it is difficult for the community residents to travel to the center so that they are less likely to make the trip for minor respiratory infections and wait until they have a severe infection or pneumonia. However, it is evident that without further study such an assumption is unwarranted. Any of the factors mentioned above might also have contributed to the high incidence.

The group realized such limitations and therefore in most instances limited itself to describing utilization patterns. If a significant difference or pattern exists, this implies nothing absolute concerning causation, but indicates a field for future study.

Much the same limitations apply to the utilization of preventative services, although many subjective factors are eliminated. Preventative services perhaps better describe utilization by choice rather than need.

The group attempted to describe some of the factors which may influence utilization as expressed by personal interview techniques. Because of "ideal" rather than "real" answering of questions, limitations of population size, and lack of uniform interviewing techniques such information must be analyzed judiciously.

DEFINITION OF TERMS

For the purpose of this study, the following terminology has been used:

Diagnoses - Refers to diagnosis as coded by Zuni Service Unit physicians.

Family Planning - Any visit to health facility in which mention was made of offering of contraceptive information and/or services as obtained from Hospital chart.

Family Folder (Field Health) - Folder on each family receiving field services by Zuni Service Unit containing following information: (1) Names and date of Birth (DOB) of each family member; (2) Record of Public Health Nurse visit to family; (3) Record of Field Clinic visits; (4) Immunization records; (5) Hospital discharge summaries and miscellaneous information on individual family members.

Field Clinic - A clinic held at a location other than the Zuni Hospital outpatient department at which a nurse is always present and a doctor may or may not be present.

Ramah Field Clinic - Clinic held at Ramah Chapter House once a week offering both preventative and curative services. Both physician and nurse are present.

Zuni Field Clinic - Clinic held at Zuni Field Health Office approximately every week offering preventative health services such as immunizations, well-baby checks, etc. Well-baby clinic is held with a doctor present every other Tuesday afternoon. Public Health Nurse conducts immunization clinic every other Wednesday afternoon.

Gravida - Number of times a woman has been pregnant.

Layette - A set of infant clothing including sleepers, undershirts, receiving blankets, diapers, etc.

Parity - Number of living children born to a woman.

Others - People not living on Zuni or Ramah Reservations.

Postpartum Visit - A visit to health facility within three months following delivery of a fetus as recorded in Hospital chart which made mention of a 1968 delivery.

Prenatal Visit - A visit to health facility for evaluation of mother's and fetus' condition during period of pregnancy excluding admission for delivery as recorded in Hospital chart.

Ramah - Referring to individuals residing within the boundaries of Ramah Reservation as obtained from face sheet of Hospital chart.

'Stork' Register - A list of all known births in Zuni Service Unit or children born to parents residing within Zuni Service Unit which is kept in the Zuni Field Health Office. This Register includes the following information: (1) Infant's name; (2) Date of Birth; (3) Parents' name; (4) Place of Birth; (5) Family Folder number.

Utilization - Use of any health service, either preventive or curative, provided by Zuni Service Unit.

Well-child Visit - Any well child seen by either a physician or nurse from time of birth to present (time of study) for immunization and/or routine physical examination.

Zuni - Referring to individual's place of residence as obtained from 'face sheet' of Hospital chart.

METHODOLOGY

Various techniques were employed to obtain information for the study chosen. The class decided on three major areas to be studied and most of the specific data to be collected. Data collection was carried out after three organized subgroups had researched and reported on the accessibility, pertinence, and manageability of such data.

Specific areas and sources of information studied are as follows:

I. DISEASE CATEGORIES

A. Daily Outpatient Disease Log - This consisted of a review of FY 1969 daily physician coded outpatient visits. Five disease categories were studied in relation to age group, residence, and month of the year.

B. Hospital Inpatient Computer Data - Information was obtained from the Albuquerque Area Indian Health Service concerning FY 1969 hospital discharges in reference to age, residence, and discharge diagnosis.

II. PREVENTATIVE SERVICES - MATERNAL AND CHILD HEALTH

A. Delivery Room Log - The records of all births in calendar year 1968 as recorded by physicians at the time of delivery was utilized to obtain a list of all mothers who delivered in 1968.

B. Stork Register - To obtain a list of all births within the Zuni Service Unit, including home births, and to cross-check the delivery room log, the "stork register" of all newborn children on the Zuni Reservation as compiled by the field health nurses was utilized.

C. Review of Health Records

1. Inpatient-Outpatient Combined Medical Chart

a. For calendar year 1968, the Zuni Hospital medical records of women who delivered

within the Zuni Service Unit were examined in reference to residence, gravidity, parity, number of prenatal visits, trimester of first visit, post partum visit, and utilization of family planning services.

b. The Inpatient-Outpatient Combined Medical Chart was utilized for children not listed in the family folders.

2. Field Health Family Folder

These records were utilized to obtain information on children born within the Zuni Service Unit in calendar year 1968 in reference to residence, age at first well-baby visit, number of well-baby visits in first 15 months of life, immunization levels, and P.P.D.'s.

III. ATTITUDES CONCERNING UTILIZATION

Questionnaire - A precoded questionnaire was administered to a sample of mothers included in category II and to a sample of the general population to describe residence, various socio-economic factors, and expressed attitudes concerning utilization. (See Appendices 3 and 8).

IV. CORRELATION OF UTILIZATION OF PREVENTATIVE SERVICES WITH ATTITUDES OBTAINED FROM QUESTIONNAIRE DATA

A single punch card containing all the information obtained under the categories of Preventative Services and Attitudes concerning utilization was made for each mother and child in the study population.

Local resources mentioned in the Acknowledgment were utilized to assess the community organizations, sensitivities, problems, and information sources.

RESULTS

I. Utilization Statistics by Disease Categories

Utilization of inpatient/outpatient services for FY 69 at Zuni Service Unit was studied; detailed findings are reflected on Tables 1-6, Appendix 1).

Distribution of total OPV at Zuni Hospital for five (5) selected disease categories--arthritis, hypertension, bronchitis, contusions and injuries, g.u. diseases was studied by residence. Of 2,187 OPV for these five (5) diseases, Zuni residents accounted for 82% of the visits and Ramah-other Navajo for 12% and 6% respectively. (See Table 1, Appendix 1).

The percent of OPV workload for FY 69 attributed to each selected disease category is described. It is noted that hypertension (25%) and bronchitis (28%) contributed 53% of workload attributed to the five diseases. The five disease categories collectively contributed to 14% of the total outpatient workload. (See Table 2, Appendix 1).

Percentage distribution of Zuni Hospital OPV by selected disease category according to residence was examined. It is observed that 46% and 47% of the Ramah and other Navajo workload, respectively, was attributed to bronchitis compared to 24% of the Zuni workload. Conversely, it was observed that 13% and 11% of the Ramah and other Navajo workload respectively was attributed to hypertension compared to 28% of Zuni workload.

Total Service Unit outpatient workload attributed to the selected disease categories for FY 69 by facility site was reviewed. As seen in Table 4, the relative numbers of patients seen at the Ramah Clinic for these diseases is small--less than 5%.

Incidence of total hospital discharges and OPV at Zuni Service Unit for selected disease categories by incidence was tabulated. The discharge rate for the Ramah population was 18% greater than the other two groups--205 per 1000 population vs. 172 per 1000 and 137 per 1000 for the Zuni and other groups respectively.

The incidence of total OPV's for the five selected disease categories was similar (See Table 5) for Zuni and Ramah when the Ramah Clinic is included.

Percentage distribution of total Service Unit outpatient visits by selected disease categories according to residence was enumerated. (See Table 6). These may be compared with the overall OPV pattern given in Table 1.

Inpatient data for nine disease categories for Zuni Hospital FY 69 was analyzed. (See Table 6A). No significant differences in disease distribution were noted by place of residence. There was a difference in average length of stay by residence as follows:

	PED.	ADULT
Zuni	5.64 days	5.17 days
Ramah	6.57 days	5.98 days
Other	6.47 days	4.92 days

II. Preventative Services Utilization

This section presents the results of the record reviews of women who gave birth in calendar year 1968. The mothers' charts were analyzed for various parameters of prenatal and postpartum care. The infants' charts were analyzed with respect to well-child care. Various tables (See Appendix 2) were developed by place of residence of mothers. The study group consisted of 121 Zuni, 38 Ramah, and 12 others.

Of the total population, 21% of the mothers had no prenatal visits recorded. Five percent of the mothers were seen for the first time during the first trimester, 29% during the second trimester and 45% during the third trimester. Table 7, Appendix 2, compares the trimester of first visit to area of residence. The distribution of all groups is similar except for those mothers receiving no prenatal care. In this group, there is a slightly higher number of Ramah and others receiving no prenatal care.

Thirty-eight percent (38%) of the total study group had 0-2 prenatal visits recorded. Twenty-one percent (21%) of the group had eight or more visits. There is a higher percentage of Ramah mothers (55%) and others mothers (58%) who were seen for 0-2 visits. Among the Zuni, thirty-two percent (32%) of the mothers had 0-2 visits. The number of prenatal visits for each group is seen in Table 8 (See Appendix 2).

Sixty-eight (68%) of the Zuni, 48% of the Ramah, and 33% of Others had a recorded postpartum examination within three months of delivery. Sixty-four (64%) of the total study group received postpartum care. Postpartum data are presented in Figure 11 (See Appendix 2).

Sixty-four percent (64%) of the total mothers examined postpartum received no Family Planning. Of this sixty-four percent (64%), ten percent (10%) declined Family Planning services. In fifty-four percent (54%) of the cases, it was unknown whether it was offered. Of the thirty-six percent (36%) of mothers receiving Family Planning, twenty-two (22%) received Intra-Uterine Contraceptive Device (IUCD) and fourteen percent (14%) received birth control pills. There was very little difference in the percent of Zuni and Ramah mothers which accepted Family Planning. Of the seventeen mothers declining Family Planning, twelve mothers were Zuni and five mothers were Ramah.

Analysis of Family Planning Methods is shown in Table 9, (See Appendix 2).

Thirty-three percent (33%) of the entire population received 0-2 well-child visits. Forty-two percent (42%) of the children had 3-4 visits and twenty-five percent (25%) of the children had 5-8+ visits. Utilization by both the Zuni and Ramah was approximately the same with the majority of the children receiving 3-4 visits. Table 10 (See Appendix 2).

Seventy-three percent (73%) of the Zuni infants, fifty-eight percent of Ramah infants (58%) and twenty-five percent (25%) of Other infants had at least one well-child visit before three months of age. Overall, sixty-six percent (66%) of the infants had at least one well-child visit before three months of age. The percentage of infants having their first well-child visit before three months of age is seen in Figure 2 (See Appendix 2).

In comparison of completed DPT and Oral Polio Series, there are no essential differences in the three population groups. For the group as a whole, sixty-three percent (63%) of the children had a completed DPT and TVOP series by 15 months. Tables No. 11 & 12 indicates the number and percentage of children receiving three DPT and three TVOP immunizations before 15 months of age.

Of all infants studied, sixty-three percent (63%) had no PPD test recorded. Thirty-one (31%) had a PPD skin test before 15 months of age. An additional six percent 6%) had a PPD after 15 months of age. The percentage of infants receiving a PPD skin test before and after 15 months of age is seen in Table 13 (See Appendix 2).

At the time of this study, sixty-nine percent (69%) of the children born between January 1, 1968, and December 31, 1968, had not received measles vaccine. Specifically, sixty-one percent (61%) of Zuni infants, sixty-nine percent (69%) of the Ramah infants, and one-hundred percent (100%) of Other group had received no measles immunization. Figure 3 shows Rubeola immunization levels of the children born between January 1, 1968, and December 31, 1968.

An attempt was made to evaluate the incentive value of layettes with the data obtained. It was concluded that this evaluation cannot be made without a prospective study utilizing a control group. (Table 14, Appendix 2).

Utilization of family planning services was studied in relation to gravidity and residence. (See Table 9, Figures 4, 5, and 6, Appendix 2). IUD's were accepted by slightly less than one-fourth of mothers with multiparas having slightly greater acceptance. Birth control pills were preferred by approximately 15-20% of Zuni mothers regardless of gravidity. Few Ramah primiparas desired birth control pills. In 50% or more of cases no information regarding birth control was available in the Hospital chart.

Most mothers brought their child to the well-child clinic 3-4 times during the first 15 months of life. There appears to be no correlation with gravidity. There is no significant difference between Zuni and Ramah utilization. (See Figures 7, 8, and 9, Appendix 2).

Two-thirds of all mothers bring their child to well-baby clinic during the first three months of life. Primigravida Zuni mothers are more likely to bring their child than are primigravida Ramah mothers. Mothers of gravida greater than four are somewhat less likely to bring their children to well-baby clinic during the first three months of life. (See Figure 10, Appendix 2).

Zuni mothers were more likely to receive a postpartum exam than Ramah mothers. Primigravidas tend to have postpartum exams more frequently than multigravidas. (See Figure 11, Appendix 2).

III. Questionnaire Results

The questionnaire was administered to 61 individuals of whom eighty percent (80%) were Zuni and twenty percent (20%) were Navajo. A sample questionnaire is found in Appendix 8 along with a tabulation of the answers. Only the results of those questions found to have significant correlations with health delivery are discussed below.

The majority to whom the questionnaire was administered, sixty-six percent (66%) were married and eighty-five percent (85%) had completed at least grade school. Twenty percent (20%) had completed high school.

The Hospital was situated within five miles of eighty percent (80%) of the study group. When the Field Clinic was included, eighty-five percent (85%) lived within five miles of a health facility.

Employment was found to interfere with attendance at the Clinics in eleven percent (11%) of the group. Of the entire group, twenty-five percent (25%) were employed full time by someone else.

Waiting time at the Clinics prevented thirty-eight percent (38%) from going to the Clinic at least some time. The Clinic setting was found to arouse discomfort in thirty-eight percent (38%) of the group. Waiting time, thirty-eight percent (38%); crowded conditions, twenty-one percent (21%); and furniture, twenty-one percent (21%) were the commonest three criticisms.

Transportation to the Hospital was considered a problem for forty-three percent (43%) of the group. This was true of twenty-five percent (25%) with respect to transportation to the Field Clinics.

An Indian Medicine Man was utilized by the immediate family members in fifty-seven percent (57%) of the study group.

IV. Correlation Between Personal Attitudes, Geographic Location, and Education with Preventive Health Care

In this section, a correlation is attempted between utilization of health services and responses to the questionnaire. (See Appendix 4). Only those questions with apparent significant correlations are discussed. A detailed tabulation of all question responses compared with the various parameters of utilization may also be found in the Appendix.

Postpartum Examination

Women were more likely to have a postpartum examination, if they lived nearer the hospital or field clinic, had fewer children to care for, and had minimal clinic waiting time.

Number of Prenatal Visits

Those mothers having completed grade school had more prenatal visits than those mothers who did not complete grade school.

Trimester of the First Prenatal Clinic Visit

The time at which a woman was seen for her first prenatal visit does not appear to be influenced by any of the factors analyzed on the questionnaire.

Age of First Well-Child Clinic Visit

A positive correlation was found between children being seen prior to three months of age and mothers who completed grade school and who live close to the medical facilities. Children from families utilizing the services of a Medicine Man were more likely to be seen in the first three months of life.

Number of Well-Child Clinic Visits

Those factors already mentioned which influenced both number of prenatal visits and a well-baby visit within the first three months of life also correlated positively with the number of times the child was seen for well-baby care.

In addition, questionnaire data demonstrates a feeling of discomfort in the Clinic setting for mothers of children having fewer well-child visits.

DISCUSSION

I. Utilization Statistics by Disease Categories

A representative sample of disease categories rather than total disease outpatient workload was studied.

The five diseases selected represented acute, chronic, and traumatic categories. They were felt to be representative of the total workload.

These disease categories were used to describe utilization figures only and do not represent incidence of disease.

Inpatient discharge data was tabulated for the nine most common discharge diagnoses at Zuni Hospital. It represents sixty percent (60%) of all Hospital discharges for FY 69. It was felt that this data gave a fair indication of incidence of Hospital discharges by residence and average length of stay by residence.

Twelve percent (12%) of the Zuni Hospital Clinic workload, of the selected disease categories, is attributed to the Ramah Navajo population and six percent (6%) to the other Navajo group. One may speculate that if full-time health clinics were made available on the Ramah Reservation, the outpatient workload at the Zuni Hospital could be decreased by as much as twelve percent (12%).

The Ramah and other Navajo group appeared to utilize the Zuni Service Unit facilities for treatment of bronchitis more than the Zuni patients did; the converse was true for hypertension. Due to the lack of knowledge of disease incidence and hereditary predisposition, it is difficult for one to determine the factors contributing to these utilization patterns. Further studies will be necessary to identify these variables.

Outpatient visit incidence for the Ramah and Zuni population groups were similar. The other Navajo group had a smaller incidence. The other Navajo group is administratively attached to the Gallup Service Unit and theoretically can receive all services at that facility. For this reason, one might reasonably expect that the incidence of utilization of Zuni Hospital outpatient services by the other Navajo would be less than either Zuni or Ramah. Inpatient data must be interpreted in the same manner.

The similar incidence of Zuni and Ramah outpatient visits is of interest when one considers the extremely isolated Ramah population contrasted with the concentrated Zuni population. The higher incidence of hospitalization for the Ramah population might tend to support the Service Unit's contention that due to the inability to provide field follow-up on the Ramah Reservation there is a greater tendency to hospitalize Ramah patients. The average length of stay of Ramah patients is longer than for Zuni by approximately one day. This tends to substantiate the Service Unit staff's contention that Ramah people are kept in the Hospital for a longer time due to lack of field follow-up on the Ramah Reservation.

II. Preventative Services Utilization

Experiences personnel were used to review the medical charts and parameters were well defined before chart reviews were undertaken. Systematic recording was done on pre-coded forms to facilitate subsequent transfer to IBM cards. Finding the specific chart containing the desired information was somewhat complicated.

Initially, the number and names of the mothers who delivered in 1968 were obtained from the Delivery Room Log. Subsequently, it was found that fifteen (15) additional deliveries were recorded in the Field Clinic 'Stork' Book which were not in the Delivery Room Log. Seven (7) of these deliveries were in the home and all fifteen (15) were included in the study.

Some well-baby visit information was recorded partially in both the Hospital and Field Clinic charts, but not completely in either. Thus both Hospital and Field Clinic charts had to be reviewed to obtain the desired information in some cases. Finding information concerning a child in the Field Clinic charts was difficult because the numbering system varied from that of the Hospital's system. The child's entry was not in alphabetical order, but rather by Family Folder number, e.g., the information on a child of an unmarried mother frequently was found in the Family Folder of the child's grandfather. If the mother had two (2) or more children and was unmarried, she usually had a Family Folder of her own.

Quite significant is the fact that twenty-one percent (21%) of all the mothers had no prenatal visits prior to onset of labor. The figure is quite striking but the reasons are obscure. Results of questionnaire indicate that parameters correlating with better level of care were: Less Clinic waiting time, fewer children to care for at home, and shorter distance from the Clinic. Of the mothers seen for a prenatal visit, the trimester when first seen was approximately equal in all groups. There was a higher percentage of Ramahs and Other mothers than Zuni in the group of those mothers not seen at all.

Eighteen percent (18%) of the total group had only 1-2 prenatal visits.

Comparing gravidity (See Appendix, Table 17)with trimester of first visit and number of visits, the Zuni primiparas had a six percent (6%) incidence of no prenatal care.

Twenty-five percent (25%) of the Zuni multiparas had no prenatal visits. Forty-two percent (42%) of Ramah primiparas and forty-seven percent (47%) of Ramah multiparas had no prenatal care. Attention must be directed to the deficiencies found in the area of delivery of maternal and child health services.

As indicated from results of the questionnaire, there were positive factors influencing attendance at well-child clinic. Those mothers (1) living nearer the Hospital or Clinic, (2) having fewer children, (3) having less waiting time at Clinic, and (4) having completed grade school, were more likely to bring their children for well-child visits. Of the total group, two-thirds of the infants had at least one well-baby visit before three months of age. This figure also closely corresponds to the number of mothers receiving postpartum examinations and to number of infants receiving three DPT and 3 Oral Polio immunizations before fifteen (15) months of age.

Review of the PPD skin testing findings shows that two-thires of the infants studied had not received a PPD skin test. In a population with a high incidence of Tuberculosis such as the Zuni and Ramah, this is inadequate.

The measles (Rubeola) immunization level of the children was extremely low. Only thirty-one percent (31%) of the infants studied had received measles vaccine. This represents a potential for a measles epidemic.

Results of family planning utilization studies are difficult to interpret because of the poor reporting of family planning discussions in the charts. Thirty-eight percent (38%) of all women studied did accept some method of family planning but in more than fifty percent (50%) of all cases no mention of the offering of services is made in the chart.

The postpartum care data indicate that utilization for all groups is relatively low and is even lower for non-Zuni residents. These figures represent physician contacts, not necessarily optimal postpartum care, as the criteria used to define a postpartum exam were extremely liberal (See "Definition of Terms") and did not necessarily include either a pelvic or pap smear. The number of postpartum visits was greatly influenced by gravidity (Figure 11) residence (Figure 11), and level of education (See Results IV). It would appear that greater emphasis could be placed on this aspect of preventive services.

Increased health education in this field and the provision for adequate facilities for pelvic exams at the Ramah Field Clinic should be considered.

III. Questionnaire

Data obtained from the questionnaire should be viewed in terms of the following restraints: multiple interviewers in a cross-cultural setting; limitations of the sample size due to vast geographic and time constraints.

In the initial field study orientation, transportation was mentioned as being a problem only with respect to the Ramah population. The present data, however, indicate that forty-six percent (46%) of the study group population feel they have a transportation problem to the Zuni Hospital. As the Ramah group comprises less than twenty percent (20%) of the group, a significant portion of the Zuni residents must also consider this to be a problem.

Validity of Question 11 regarding unemployment may be questioned in that those who were employed may not have been contacted. A more valid sample could have been obtained by questioning during the non-working hours.

The question concerning the use of alcohol was ruled invalid after questioning revealed emotional responses and refusal to answer by some residents.

Preliminary questioning revealed that waiting time was a major problem in the Clinic. The data suggests this to be true. Waiting prevented forty percent (40%) of the study group from going to the Hospital Clinic and thirty-three percent (33%) from going to the Field Clinics. Waiting was the major reason for discomfort while at the Clinic.

Of interest is that fifty-seven percent (57%) of those questioned had seen a medicine man within the last year and a half.

IV. Correlation Between Personal Attitudes, Geographic Location, and Education with Preventive Health Care

Utilization of maternal-child health services may be measured only by examining the composite of the five parameters studied. No individual parameter was found to be a good index of overall utilization.

Proximity to the health facilities, numbers of children cared for, waiting time, general discomfort in the Clinic, level of education, and utilization of the medicine man are significant factors which influence utilization.

The correlations were performed purely by inspection of the numbers. No statistical analyses were attempted because of the small numbers involved. (See Appendix 4).

CONCLUSIONS

1. The immunization levels in the study group are low. In particular, the rubeola immunization level is alarmingly low.

2. In view of the high incidence of tuberculosis in the Service Unit population, the number of infants receiving a PPD skin test is extremely low.

3. Thirty-three percent of the children had 2 or less well-child visits over the entire study period.

4. Twenty-one percent of all mothers did not have prenatal care. Completion of grade school correlated positively with the number of prenatal visits.

5. Postpartum examinations were received by sixty-four percent of Zuni and Ramah women. Ideally, all women should have a postpartum exam.

6. Contraceptive methods were utilized by thirty-six percent of the mothers in the study group.

7. Eighteen percent of the outpatient workload at the Zuni Hospital is attributable to non-Zuni residents. Ramah residents account for twelve percent and other Navajo six percent of the workload.

8. The utilization of general outpatient facilities by Zuni and Ramah were comparable on a per capita basis. However, the Ramah utilized significantly less preventive services on a per capita basis.

9. Waiting time was found to be a significant factor preventing the utilization of health services.

10. The method of record keeping is fragmented; consequently, it is difficult to obtain specific medical information.

11. The method utilized for this study can be used with minor variations in other service units with similar problems.

RECOMMENDATIONS

I. The Zuni Service Unit should have a well-organized and defined Field Health Program. The incoming Field Health Officer must have as his number one priority the responsibility to plan, to set priorities, and to allocate resources to accomplish the following:

A. Better organization of health records so that both Field and Hospital records contain all pertinent individual medical information.

B. Development of a tickler record system to insure that all patients receive maximum preventive services. This should include immunizations, tuberculin skin tests, pap smears, prenatal visits, and postpartum visits.

C. Better prenatal care delivery with special emphasis on primigravidas from the Ramah Reservation.

D. Better organization of and coordination with Public Health Nursing personnel to insure maximum utilization of services.

E. Active rubeola immunization and PPD skin testing program of the entire preschool population.

II. Additional preventive health services should be made available to the Ramah Reservation as follows:

A. Increased Public Health Nursing.

B. Additional Field Clinics.

C. Increased coordination with Community Health Representatives.

III. A review should be undertaken of utilization of Zuni Service Unit facilities by other Navajo groups (Cousins) not residing within the Service Unit. This information will aid in allocation of medical resources and funds to both Zuni and Gallup Service Units.

APPENDICES

Table 1. Distribution of Total Outpatient Visits at the Zuni Hospital for the Selected Disease Categories* by Residence for FY 69.

Residence	Total No. of OP Visits	% of Total Visits
Zuni	1785	82
Ramah	252	12
Other	150	6
Total	2187	100

*Arthritis, hypertension, bronchitis, contusions and injuries, genitourinary infections.

Table 2. Percent of Zuni Hospital Outpatient Workload Attributable to the Selected Disease Categories for FY 69.

Disease Category	Total # of OP Visits	% of Total Visits for Selected Disease Cat.	% of Total OPV at Hospital
Arthritis	226	11	1.5
Hypertension	551	25	3.5
Bronchitis	614	28	3.9
Contusions & Injuries	325	15	2.1
G.U. Diseases	471	21	3.0
Total	2187	100	14.0

Table 3. Percentage Distribution of Zuni Hospital Outpatient Visits by Disease Category According to Residence

FY 1969

Residence	Disease Category					
	Arth. %	Hyper. %	Bron. %	Cont. & Injuries %	G.U. Diseases %	Total %
Zuni	10	28	24	15	23	100
Ramah	10	13	46	16	15	100
Other	10	11	47	16	16	100

Table 4. Total Outpatient Workload Attributable to the Selected Disease Categories for FY 69 by Facility Location

Disease Category	Total # of OPV for Service Unit	Total # of OPV For Zuni Hospital Clinic	Total # of OPV for Ramah Field Clinic	Total # of OPV for Zuni Field Clinic
Arthritis	243	226	17	0
Hypertension	569	551	18	0
Bronchitis	651	614	37	0
Contusions & Injuries	336	325	11	0
G.U. Diseases	474	471	3	0
Total	2273	2187	86	0

Table 5. Incidence of Total Hospital Discharges and Outpatient Visits at Zuni Service Unit for Selected Disease Categories by Residence by Site Location Per 1000 Population.

FY 1969

Residence	OPV/1000 for Selected Disease Categories at Service Unit	OPV/1000 for Selected Disease Categories at Zuni Hospital	OPV/1000 for Selected Disease Categories at Ramah Field Clinic	OPV/1000 for Selected Disease Categories at Zuni Field Clinic	Total Hospital Discharges /1000
Zuni	324	324	0	0	172
Ramah	307	229	78	0	205
Other	136	136	0	0	137

Table 6. Percentage Distribution of Total Service Unit Outpatient Visits by Selected Disease Category According to Residence.

FY 1969

Residence	Disease Category				
	Arth. %	Hyper. %	Bron. %	Cont. & Injuries %	G.U. Diseases %
Zuni	75	87	66	78	16
Ramah	19	10	24	15	8
Other	6	3	10	7	6

Table 6A

ZUNI HOSPITAL DISCHARGES
1969 Records

Diagnosis	TOTAL	Zuni	
		Under 15 yrs.	15+ yrs.
Infective and Parasitic Diseases-001-138	66	26	23
Days	408	148	155
Diabetes Mellitus-260	25	-	19
Days	222	-	169
Influenza and Pneumonia-480-493	170	62	42
Days	1,119	327	310
Gastroenteritis and Colitis-571	36	24	2
Days	245	170	11
Diseases of Genitourinary System-590-637	51	19	25
Days	364	162	153
Delivery without Complication-660	88	1	66
Days	387	4	278
Complications of Pregnancy and Delivery with Complication-640-652, 670-689	146	-	109
Days	579	-	434
Diseases of Skin & Cellular Tissue-690-716	48	20	11
Days	261	100	68
Injuries and Adverse Effects-800-999	112	31	47
Days	537	122	202
Total Discharges	1,323	430	517

RESIDENCE					
Ramah		Other Navajo		All Others	
Under 15 yrs.	15+ yrs.	Under 15 yrs.	15+ yrs.	Under 15 yrs.	15+ yrs.
9	2	2	4	-	-
75	5	7	18	-	-
-	2	-	3	-	1
-	12	-	9	-	32
32	10	15	4	5	-
248	65	106	27	36	-
4	-	5	1	-	-
18	-	41	5	-	-
-	5	-	2	-	-
-	42	-	7	-	-
-	14	-	5	-	2
-	73	-	24	-	8
-	14	-	20	-	3
-	64	-	76	-	5
8	2	5	2	1	-
29	15	26	18	5	-
8	11	3	6	2	4
31	83	14	48	6	31
127	98	62	60	13	16

Table 7 Appendix 2

Number and Percent of Mothers of Children Born in Calendar Year 1968 by Trimester of First Prenatal Visit and Residence

TRI-MESTER	Zuni Number of Mothers	%	Ramah Number of Mothers	%	Other Number of Mothers	%	Total Number of Mothers	%
First	6	5	2	5	2	6	8	5
Second	39	32	5	13	5	42	49	29
Third	58	48	18	47	2	16	78	45
Net Seen	18	15	13	34	5	42	36	21
Total	121	100	38	100	12	100	171	100

Table 8

Number and Percent of Mothers Whose Children Were Delivered in Calendar Year 1968 by Number of Prenatal Visits and Place of Residence

No. of Pre-Natal Visits	Zuni Number of Mothers	%	Ramah Number of Mothers	%	Other Number of Mothers	%	Total Number of Mothers	%
8	28	23	6	16	2	17	36	21
7	9	7	2	5	1	8	12	7
6	7	6	2	5	1	8	10	6
5	9	7	1	3	0	0	10	6
4	15	12	4	10	0	0	19	11
3	15	12	2	5	1	8	18	10
2	8	7	7	18	1	8	16	9
1	12	10	2	5	1	8	15	9
0	18	15	12	32	5	42	35	20
Total	121	99%	38	99%	12	99%	171	99%

Table 9

Number and Percent of Mothers of Children Born in Calendar Year 1968 by Residence and Method of Family Planning

Family Planning Method	Zuni		Ramah		Other		Total	
	Number of Mothers	%	Number of Mothers	%	Number of Mothers	%	Number of Mothers	%
Unknown	60	50	23	60	10	84	93	54
Declined	15	12	2	5	0	0	17	10
Other	1	1	0	0	0	0	1	1
Pills	21	17	2	5	1	8	24	14
IUD	24	20	11	29	1	8	36	21
Total	121	100	38	100	12	100	171	100

Table 10

Number and Percent of Children Born in Calendar Year 1968 by Number of Well-Baby Visits and Residence

No. of Well-Baby Visits	Zuni		Ramah		Other		Total	
	Number of Children	%	Number of Children	%	Number of Children	%	Number of Children	%
Unknown	1	1	2	5	0	0	3	2
5-8+	37	30	6	16	0	0	43	25
3-4	46	38	20	53	4	25	70	40
0-2	38	32	10	26	8	67	56	33
Total	121	101	38	100	12	92	172	100

Table 11

Number and Percent of Children Born in Calendar Year 1968 Receiving a Completed Initial DPT Series (3 Shots) in First 15 Months of Life by Residence

Completed DPT Series	Zuni		Ramah		Other		Total	
	Number of Children	%	Number of Children	%	Number of Children	%	Number of Children	%
Unknown	1	1	1	3	0	0	2	1
No	43	36	11	33	8	67	62	37
Yes	77	63	25	66	4	33	106	63
Total	121	100	38	102	12	100	170	101

Table 12

Number and Percent of Children Born in Calendar Year 1968 Receiving at Least 3 Doses of Trivalent Oral Polio Vaccine in First 15 Months of Life

Completed TVOP Series	Zuni		Ramah		Other		Total	
	Number of Children	%	Number of Children	%	Number of Children	%	Number of Children	%
Unknown	1	1	1	3	1	8	3	2
No	46	38	12	32	8	67	66	38
Yes	74	61	24	63	3	25	101	58
Total	121	100	38	98	12	100	170	98

Table 13

Number and Percent of Children Born in Calendar Year 1968 Receiving PPD Before and After 15 Months by Residence

P.P.D. Skin Test	Zuni		Ramah		Other		Total	
	Number of Children	%	Number of Children	%	Number of Children	%	Number of Children	%
Unknown	1	1	2	5	0	0	3	2
Not Tested	65	50	28	74	12	100	105	63
Tested - Over 15 Mos.	10	8	0	0	0	0	10	6
Tested - 15 Mos. or Under	45	37	8	21	0	0	53	31
Total	121	96	38	100	12	100	171	102

Table 14

Number and Percent of Mothers of Children Born in Calendar Year 1968 Who Received Layettes by Residence

Layette Given	Zuni		Ramah		Other		Total	
	Number of Mothers	%	Number of Mothers	%	Number of Mothers	%	Number of Mothers	%
Unknown	0	0	1	3	0	0	1	1
No	116	96	15	40	1	8	132	78
Yes	5	4	22	58	11	92	38	22
Total	121	100	38	101	12	100	171	101

Table 15

Number of Visits to Prenatal Clinic Related to Gravidity in Zuni Females Delivering at the Zuni Hospital 1968

	Number of Visits Made to Prenatal Clinic			
	0-1	2-3	4 plus	Total
Number of Zuni Primigravidas	3 (9%)	7 (18%)	23 (70%)	33
Number of Zuni Females with 2 to 3 Children	9 (23%)	7 (18%)	23 (59%)	39
Number of Zuni Females with 4 or more Children	18 (37%)	9 (18%)	22 (45%)	49

Table 16

Number of Visits to Prenatal Clinic Related to Gravidity in Ramah Females Delivering at the Zuni Hospital 1968

	Number of Visits Made to Prenatal Clinic			
	0-1	2-3	4 plus	Total
Number of Ramah Primigravidas	5 (42%)	1 (8%)	6 (50%)	12
Number of Ramah Females with 2 to 3 Children	0	3 (33%)	6 (67%)	9
Number of Ramah Females with 4 or more Children	9 (53%)	8 (47%)	0	17

Table 17

Trimester at First Visit to Prenatal Clinic Related to Gravidity in Zuni Females Who Delivered at Zuni Hospital 1968

	Trimester at First Visit				
	0 Visits	1st	2nd	3rd	Total
Number of Zuni Primigravidas	2 (6%)	3 (9%)	16 (49%)	12 (35%)	33
Number of Zuni Females with 2 to 3 Children	4 (10%)	1 (3%)	10 (26%)	24 (62%)	39
Number of Zuni Females with 4 or more Children	12 (25%)	2 (4%)	13 (26%)	22 (45%)	49

Table 18

Trimester of First Visit to Prenatal Clinic Related to Gravidity in Ramah Navajo Females Who Delivered at the Zuni Hospital 1968

	Trimester at First Visit				
	0 Visits	1st	2nd	3rd	Total
Number of Ramah Primigravidas	5 (42%)	1 (8%)	1 (8%)	5 (42%)	12
Number of Ramah Females with 2 to 3 Children	0	0	3 (33%)	6 (67%)	9
Number of Ramah Females with 4 or more Children	8 (47%)	1 (6%)	1 (6%)	7 (41%)	17

Figure 1

Percent of Postpartum Examinations Done Within 3 Months Postpartum on Mothers Who Delivered at Zuni Hospital in 1968 by Residence

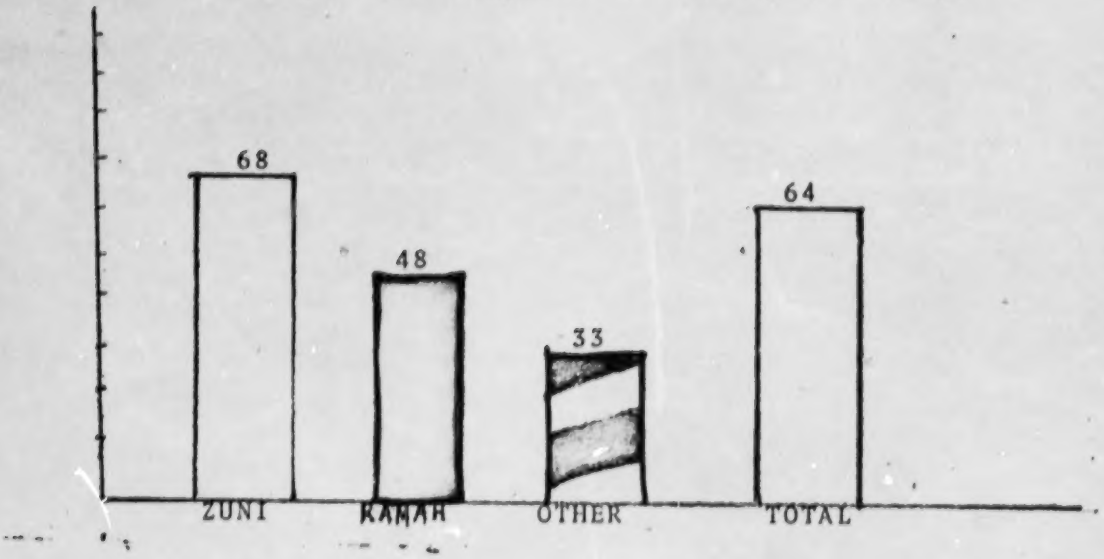


Figure 2

Percent of Children Born at Zuni Hospital in 1968 Who Made at Least One Well-Child Visit in the First 3 Months of Life by Residence

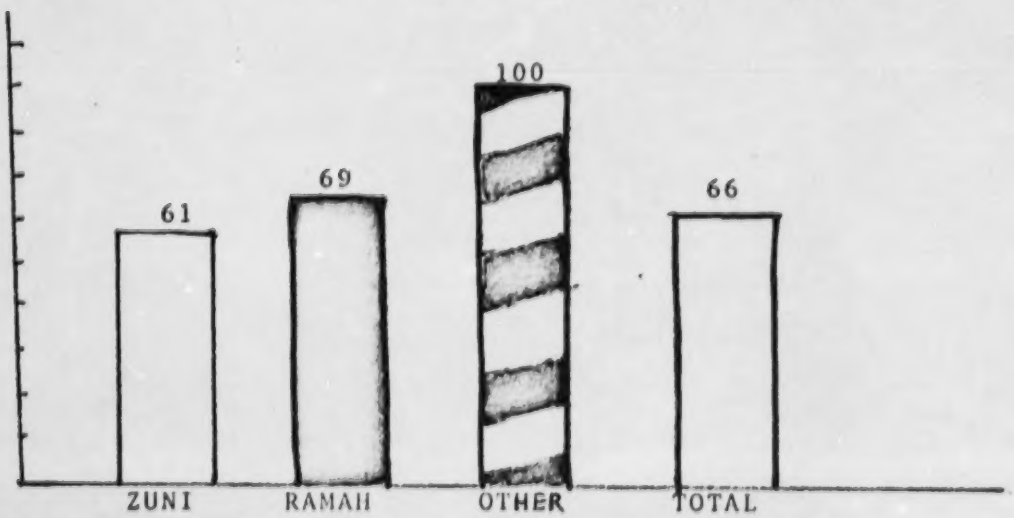


Figure 3

Percent of Children Born at Zuni Hospital in 1968 Who Did Not Receive Measles (Rubeola) Vaccine Before 4-24-70 by Residence

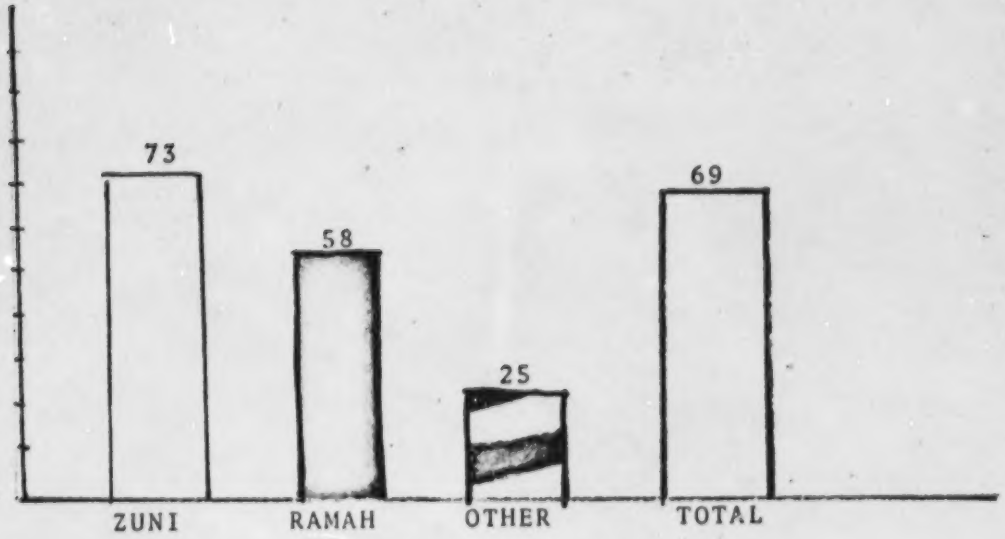


Figure 12

Percent of Primagravida Mothers Who Delivered at the Zuni Hospital in 1968 by Residence and Who Were Given Family Planning Information and/or Devices

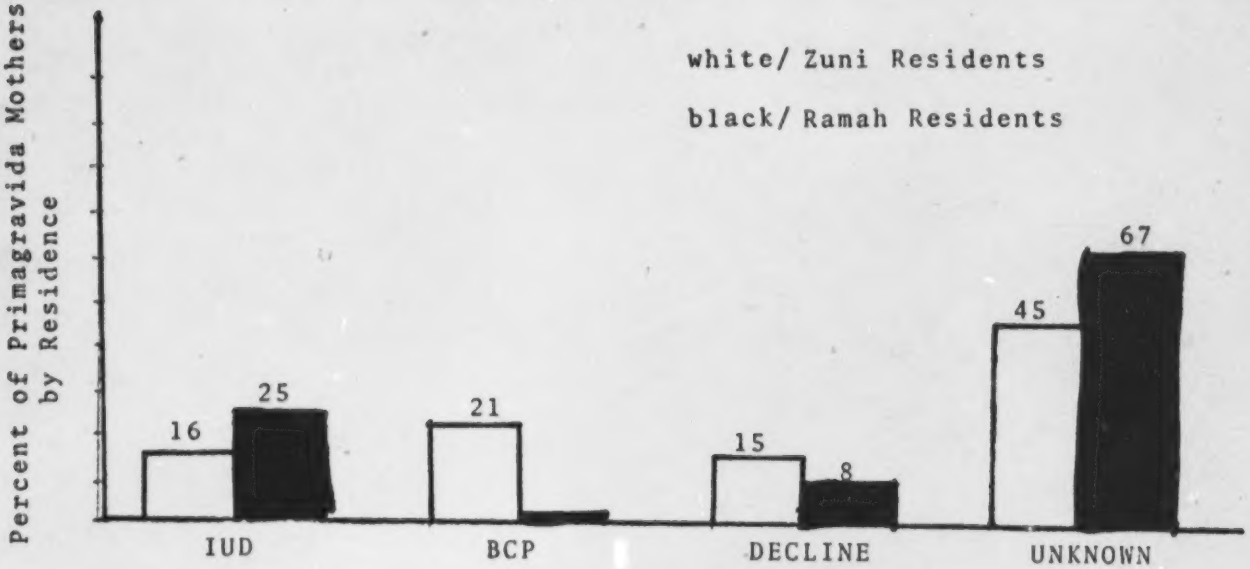


Figure 13

Percent of Mothers of Gravida 2 and 3 Who Delivered at Zuni Hospital in 1968 by Residence Who Were Given Family Planning Information and/or Devices

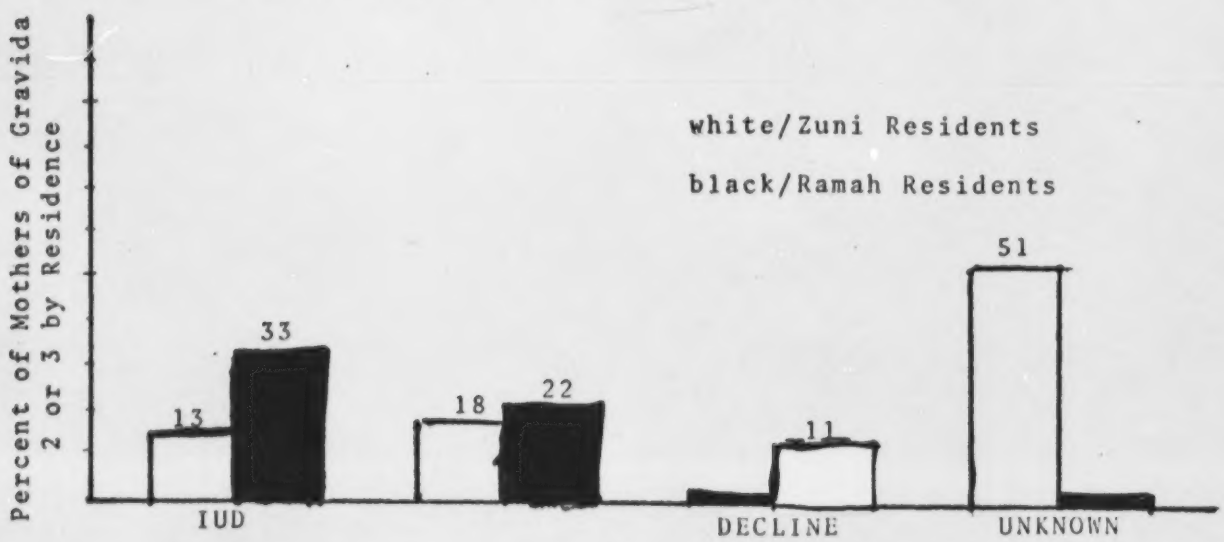


Figure 6

Percent of Mothers of Gravida Four or More Who Delivered at Zuni Hospital in 1968 by Residence Who Were Given Family Planning Information and/or Devices

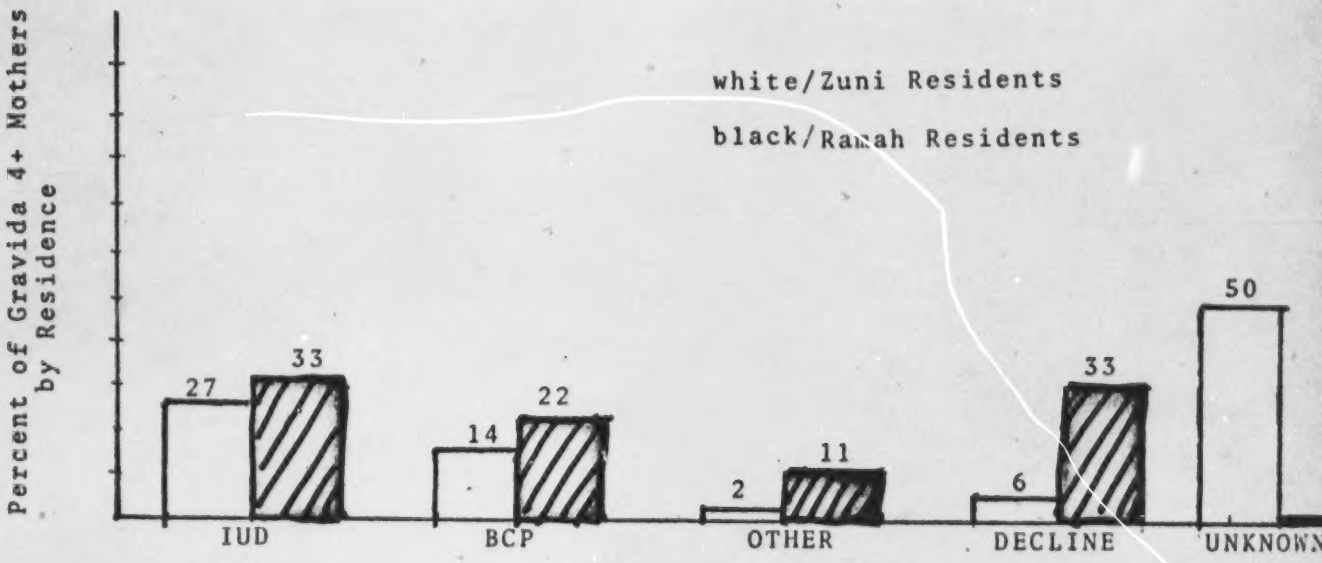


Figure 7

Percent of Primagravida Mothers Who Delivered at Zuni Hospital in 1968 by Residence Who Brought Their Children to Well-Child Clinic During the First 15 Months of Life

Figure 8

Visits to Well-Child Clinic in First 15 Months of Life for Children Delivered at Zuni Hospital in 1968 of Mothers of Gravida 2 and 3 by Residence

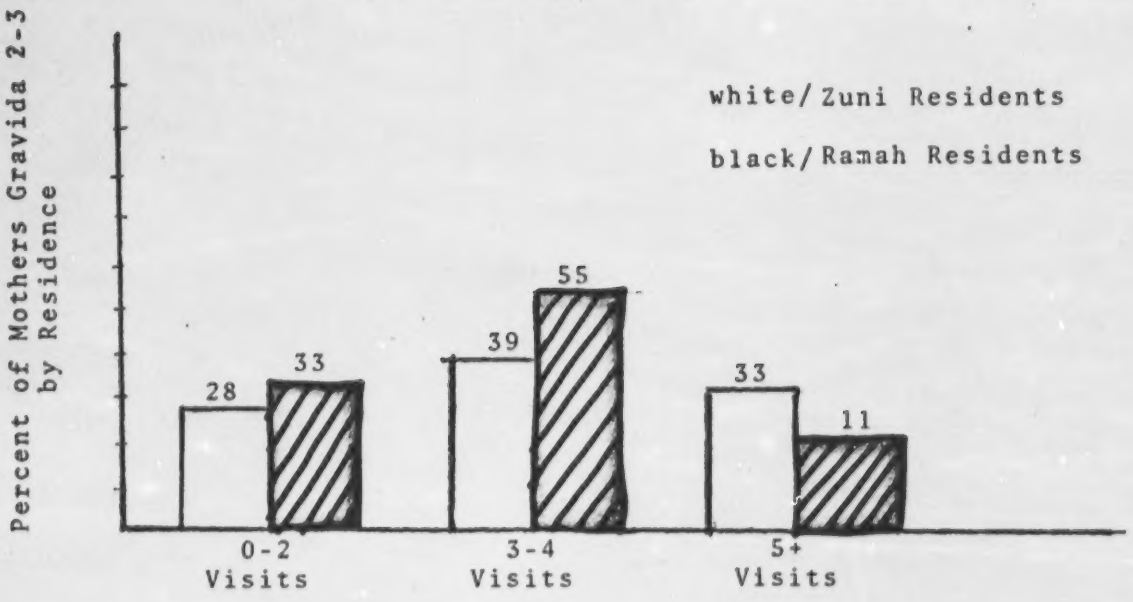


Figure 9

Visits to Well-Child Clinic in First 15 Months of Life for Children Delivered at Zuni Hospital in 1968 of Mothers of Gravida 4 or more by Residence

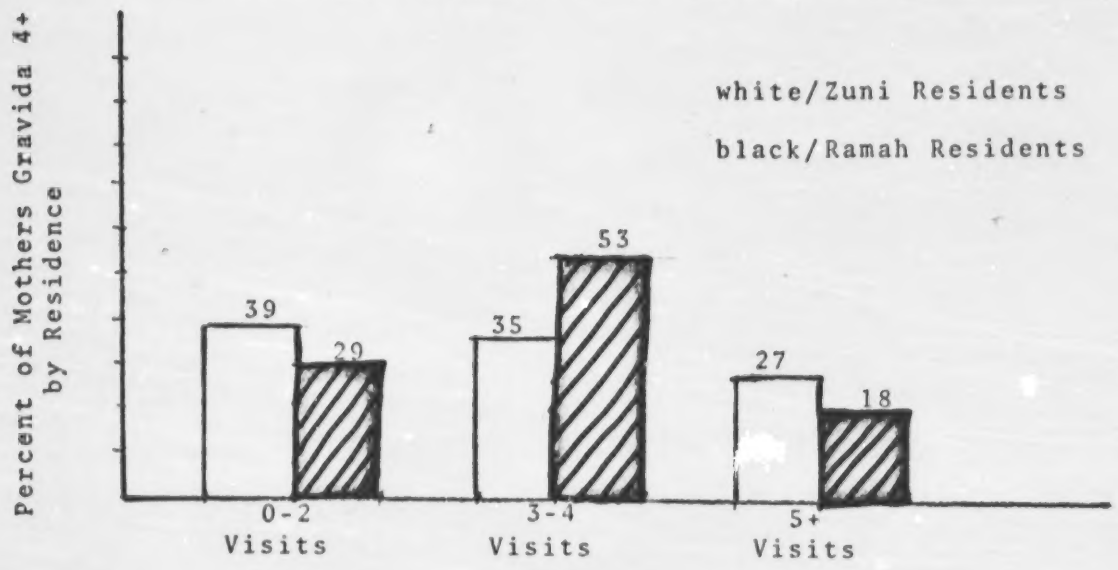


Figure 10

Percent of Mothers Delivered at Zuni Hospital in 1968 by Gravida and Residence Who Brought Their Child to Well-Baby Clinic Within the First 3 Months of Life

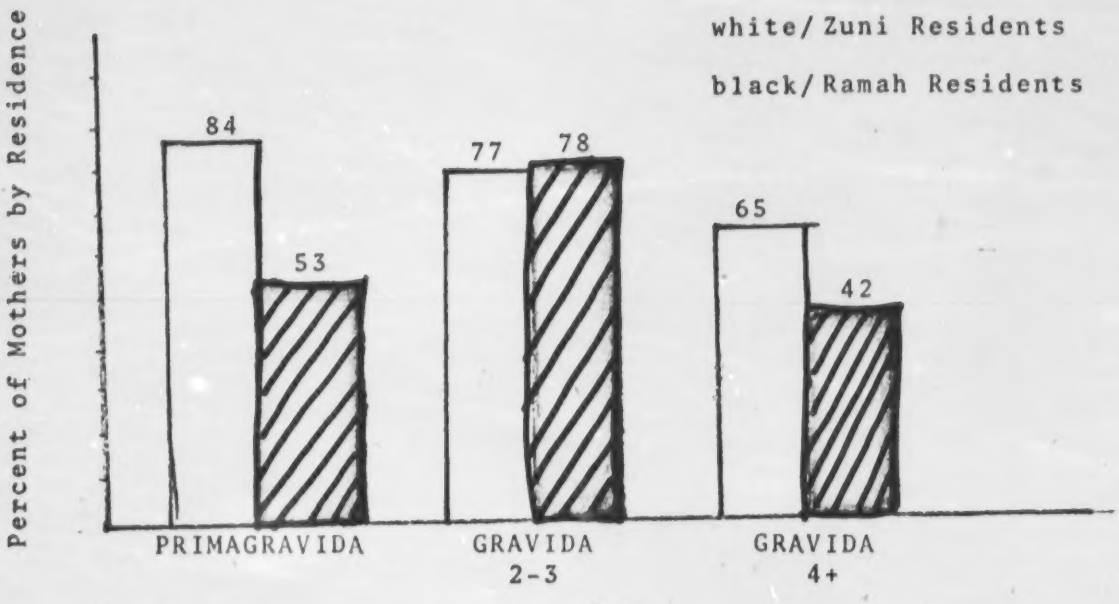
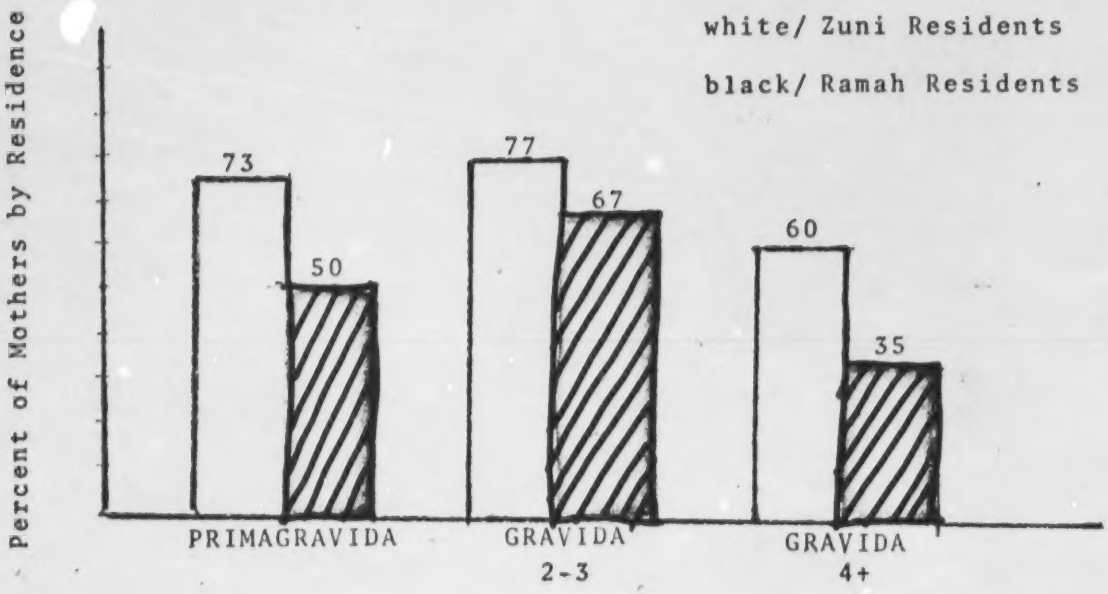


Figure 11

Percent of Mothers Delivered at Zuni Hospital in 1968 by Gravida and Residence Who Received a Postpartum Exam Within 3 Months of Delivery



Appendix 3 Responses on Questionnaire

( ) Indicate actual number of responses

Pre-Coded Information Sheets Used To Gather Data in Zuni and Ramah

NAME: Study Group Total

TRIBE: [ ] (1)
(49) 1 - Zuni
(12) 2 - Navajo
(113) 9 - Unknown

AGE: [ ] (2)
(0) 1 - 10-14
(7) 2 - 15-19
(20) 3 - 20-24
(11) 4 - 25-29
(10) 5 - 30-34
(5) 6 - 34-39
(8) 7 - Over 40
(0) 9 - Unknown

SEX: [ ] (3)
(5) 1 - Male
(56) 2 - Female

OCCUPATION: [ ] (4)
(23)1 - Self-employed
(19)2 - Unemployed
(2)3 - Work for others part time
(16)4 - Work for others full time
(1)9 - Unknown

MARITAL STATUS: [ ] (5)
(7)1 - Single
(48)2 - Married
(1)3 - Divorced
4 - Widowed
(5)9 - Unknown

[ ] (6) Do you receive welfare assistance?
(4) 1 - Yes
(57)2 - No
9 - Unknown

[ ] (7) What is your highest level of education?
(9)1 - Grade School Incomplete
(7)2 - Grade School Complete
(33)3 - High School Incomplete
(9)4 - High School Complete
(1)5 - Trade School Incomplete
(1)6 - Trade School Complete
(1)7 - College Incomplete or Complete
(0)9 - Unknown

[ ] (8) How far do you usually live from the Zuni Hospital?
(48)0 - 0-5 miles
(1)1 - 6-20 miles
(3)2 - 21-40 miles
(8)3 - 41 or over
(1)9 - Unknown

[ ] (9) How far do you usually live from the Field Clinic?
(52)1 - 0-5 miles
(1)2 - 6-10 miles
(6)3 - 11-20 miles
(1)4 - 21 or over
(1)9 - Unknown

Does caring for children prevent you from coming to the Field Clinic or Hospital Clinic?

[ ] (10a) Zuni Hosp. Clinic	[ ] (10b) Field Clinic
(13) 1-Sometimes	(11) 1-Sometimes
(7) 2-Often	(6) 2-Often
(40) 3-Never	(43) 3-Never
(1) 9-Unknown	(1) 4-Unknown

Does your job keep you from coming to the Field Clinic or Hospital Clinic?

	Zuni Hosp. Clinic		Field Clinic
11a		11b	
(7)	1 - Yes	(7)	1 - Yes
(54)	2 - No	(54)	2 - No
(0)	9 - Unknown	(0)	9 - Unknown

Does the use of alcohol by any of your friends prevent them from coming to the Hospital Clinic or Field Clinic?

	Zuni Hosp. Clinic		Field Clinic
12a		12b	
(5)	1 - Often	(5)	1 - Often
(1)	2 - Sometimes	(1)	2 - Sometimes
(26)	3 - Never	(25)	3 - Never
(29)	9 - Unknown	(30)	9 - Unknown

Does the time you have to wait to see the doctor prevent you from coming to the Hospital Clinic or Field Clinic?

	Zuni Hosp. Clinic		Field Clinic
13a		13b	
(23)	1 - Yes	(19)	1 - Yes
(34)	2 - No	* (39)	2 - No
(4)	9 - Unknown	(3)	9 - Unknown

Do you understand why you have to wait to see the doctor at the Clinic?

14

(41) 1 - Yes
(15) 2 - No
(5) 9 - Unknown

Do you feel uncomfortable when you see the doctor at the Zuni Hospital Clinic or Field Clinic?

	Zuni Hosp. Clinic		Field Clinic
15a		15b	
(22)	1 - Yes	* (18)	1 - Yes
* (35)	2 - No	(39)	2 - No
(4)	9 - Unknown	(4)	9 - Unknown

If so, why?

Lack of privacy:

16	1 - Yes (6) 2 - No (47) 9 - Unknown (8)	17	1 - Yes (6) 2 - No (48) 9 - Unknown (7)

Crowded conditions:

18	1 - Yes(13) 2 - No (43) 9 - Unknown (5)	19	1 - Yes (10) 2 - No (47) 9 - Unknown (4)

Uncomfortable furniture:

20	1 - Yes(13) 2 - No (42) 9 - Unknown (6)	21	1 - Yes (11) 2 - No (44) 9 - Unknown (6)

Waiting time:

22	1 - Yes(23) 2 - No (36) 9 - Unknown (2)	23	1 - Yes (18) 2 - No (41) 9 - Unknown (2)

Other reasons:

24	1 - Yes (4) 2 - No (45) 9 - Unknown (12)	25	1 - Yes (3) 2 - No (48) 9 - Unknown (10)

Do you have a transportation problem getting to the Zuni Hospital Clinic or Field Clinic?

26a	Zuni Hosp. Clinic		26b	Field Clinic
(26)	1 - Yes	*	(15)	1 - Yes
(34)	2 - No		(45)	2 - No
(1)	9 - Unknown		(1)	9 - Unknown

Have you or your children gone to a medicine man for health care within the last year and a half?

27 (35) 1 - Yes
(26) 2 - No
(0) 9 - Unknown

28 Do you get along with the people working in the Zuni Hospital Clinic or other persons working for the Indian Health Service?

(37) 1 - Yes
(23) 2 - No
(1) 9 - Unknown

Legends

I - Parameter No. 1 - Postpartum examinations performed.

II - Parameter No. 2 - Number of Prenatal Visits: High - Five Visits or More
Low - Zero to Four Visits

III - Parameter No. 3 - Age of First Well-Child Clinic Visit

IV - Parameter No. 4 - Number of Well-Child Clinic Visits: High - Over Three Visits
Low - Zero to Three Visits

V - Parameter No. 5 - Trimester of First Prenatal Clinic Visit

Questions 4 through 28 Refer to Questionnaire

Explanation*

A - Answers to question No. 7 were combined into three categories:
1 - Grade School Completion or less
2 - High School Incomplete
3 - High School Completion or Higher

B. Answers to question No. 9 were combined into two categories:
1 - 10 miles and under
2 - Over 10 miles

Appendix 4
Correlation Between Personal Attitudes, Geographic Location, and Education with Preventive Health Care

Question	Ans. No.	Total	I		II		III		IV		V	
			Yes	No	High	Low	<3 Mos.	>3 Mos.	Low	High	1+2	3
4 (Occupation)	1	23	15	8	14	9	14	9	12	11	9	11
	2	19	11	8	11	8	13	6	7	11	9	6
	3	2	1	1	2	0	2	0	0	2	0	2
	4	16	11	5	7	9	14	2	5	11	7	6
	9	1	0	0	0	0	—	—	—	—	0	0
7 (Education) *	1	16	9	7	12	4	10	6	9	7	7	5
	2	33	22	11	17	15	21	11	12	28	13	14
	3	12	8	4	5	7	12	0	3		5	6
9 (Distance)*	1	53	31	16	25	21	35	11	16	30	20	19
	2	8	5	4	7	5	5	4	5	3	4	3
10b (Care of Children)	1	11	5	5	7	4	8	3	4	7	5	0
	2	6	2	4	5	1	4	2	3	3	3	3
	3	43	31	12	21	22	30	12	16	26	17	7
	9	9	—	—	—	—	—	—				
13a (Waiting Hospital)	1	23	12	11	14	9	14	9	8	14	10	10
	2	34	24	10	9	15	25	8	16	18	12	14
	9	4	2	0	0	0	3	0	0	2	3	0
13b (Waiting Field)	1	19	8	11	12	7	11	8	7	11	10	6
	2	39	29	10	21	8	29	9	17	22	13	18
	9	3	1	0	0	1	3	0	—	—	2	1
15a	1	22	16	6	13	9	16	6	12	10	11	8
	2	35	21	14	18	17	23	11	12	22	13	14
	9	4	1	1	1	1	4	0	—	—	1	3
15b (Comfort)	1	18	13	5	12	6	19	5	10	8	8	7
	2	39	24	15	18	21	37	12	13	25	17	14
	9	4	1	1	2	0	2	0	—	—	0	4
26a ansportation Hospital)	1	26	15	11	15	11	18	8	9	17	9	12
	2	34	23	11	17	15	24	9	15	19	15	13
	9	1	1	0	-	-	1	0	-	—	1	0
26b ansportation Field)	1	15	—	—	8	7	9	6	6	9	6	7
	2	45			23	20	33	11	17	25	19	17
	9	1					1	0			0	1
27 (Medicine Man)	1	35		—	18	16	27	8	12	22	13	16
	2	26		—	14	11	16	9	11	12	12	9
	9	0	—	—	—	—	—	—	—	—	0	0
28 (Get Along)	1	37	—	—	18	18	27	16	16	19	16	14
	2	23	—	—	13	9	16	6	8	14	9	10
	9	1	—	—		—	—	1	—		0	1

Appendix 5

ABSTRACT OF INDIAN HEALTH SERVICE RECOMMENDATIONS

Optimal level of immunizations, prenatal care and postpartum care as abstracted from Indian Health Service Issuances. (Chapter 10, Manual Instructions 3-10.4 Preventive Services and Chapter 13, Maternal and Child Health).

A. OPTIMAL IMMUNIZATION SCHEDULE

Newborn	- DPT - (Optional - Some Protection Against Pertussis)
2 Months	- DPT #1 and T.O.P.V. #1
3 Months	- DPT #2 and T.O.P.V. #2
4 Months	- DPT #3 and T.O.P.V. #3
6-9 Months	- P.P.D.
9-12 Months	- Measles (Further Attenuated) No Gamma Globulin
12-15 Months	- DPT (B) and T.O.P.V. (B)
15-24 Months	- Smallpox
2 Years	- P.P.D.
3 Years	- DPT (B), P.P.D.
4 Years	- P.P.D.
5-6 Years	- DT (Adult) and T.O.P.V.
6 Years	- Smallpox Booster
Subsequently	- P.P.D. Every Year. Smallpox Every Five Years.
	DT (Adult) - Every 10 Years

Note: DPT can be started at any age when the child is first seen, although diptheria and tetanus antibody response is better after 2-3 months when maturation of immune mechanism occurs.

An initial series of DPT consists of three (3) injections regardless of the time interval as long as the first injection is given after 4-6 weeks of age.

B. Prenatal Care

The initial prenatal exam should take place as soon as possible after pregnancy is discovered and should consist of a complete medical history and physical exam including pelvic exam. Laboratory work at this time should include hematocrit, hemoglobin, blood type including RH factor, urinanalysis, and serology. It should be performed early in pregnancy and repeated at 7-8 months' gestation.

Subsequent examinations for a normal pregnancy should include at least two (2) examinations although additional standards are listed.

INITIAL VISIT TO 32 WEEKS - MONTHLY
32 TO 36 WEEKS - EVERY 2 WEEKS
36 WEEKS TO DELIVERY - WEEKLY

C. Postpartum Care

Every woman who delivers a child should return in about 6 weeks for a postpartum examination. This should include evaluation of general physical condition, blood pressure determination, hematocrit, urinanalysis and exam of the abdominal wall and breasts. A thorough pelvic exam should be performed.

Appendix 6

ZUNI SERVICE UNIT MATERNAL AND CHILD
HEALTH PROGRAM OBJECTIVES

1. Immunization Schedule

6 weeks of age	- Physical examination by Dr. at Hospital at time of mother's postpartum visit
6 weeks	- DPT #1 and Oral Trivalent Polio #1
12 weeks	- DPT #2 and Oral Polio #2 given by field nurse at Field Clinic
18 weeks	- DPT #3 at Field Clinic with M.D. present
6 months	- PPD given by nurse at Field Clinic
10-12 months	- Measles given by nurse and/or M.D. at Field Clinic usually in winter months
18 months or after	- Smallpox at Field Clinic (never given between April and October)

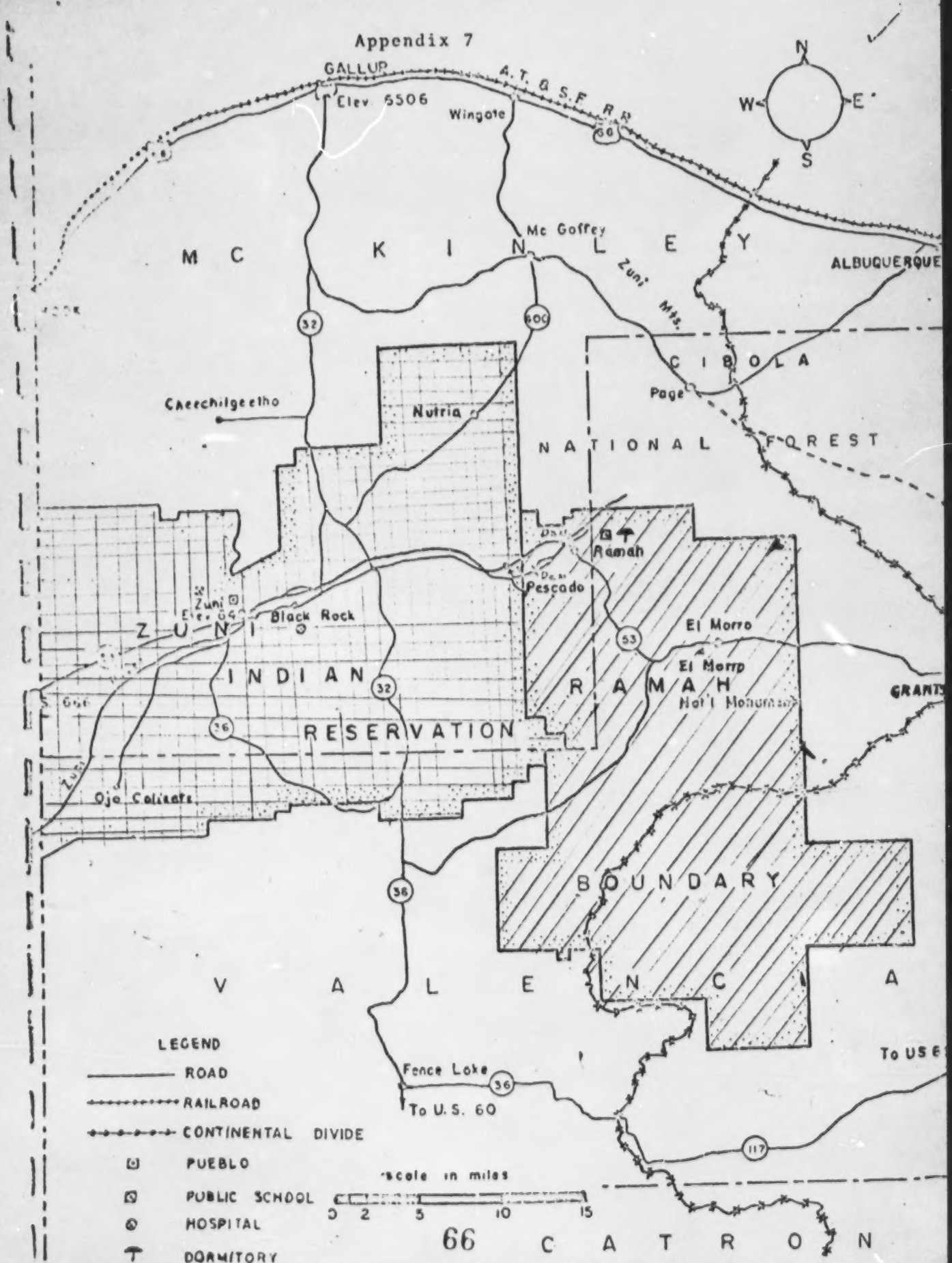
2. Prenatal Care

a. First - Complete history and physical examination is done. Laboratory tests completed include CBC, blood type and Rh, Urinanalysis, serology, and cervical culture for gonococcus.

b. Subsequent - Patients are then seen monthly until final month when they are seen bi-weekly. Any complicated cases are seen weekly as required.

3. Postpartum Care- Patient is examined including pelvic examination and hematocrit is done. Birth control methods are discussed.

Appendix 7



C A T R O N

Appendix 8

Pre-Coded Information Sheets
Used To Gather Data in Zuni
and Ramah

NAME: _____

TRIBE: [ ] (1)
1 - Zuni
2 - Navajo
9 - Unknown

AGE: [ ] (2)
1 - 10-14
2 - 15-19
3 - 20-24
4 - 25-29
5 - 30-34
6 - 34-39
7 - Over 40
9 - Unknown

SEX: [ ] (3)
1 - Male
2 - Female

OCCUPATION: [ ] (4)
1 - Self-employed
2 - Unemployed
3 - Work for others part time
4 - Work for others full time
9 - Unknown

MARITAL STATUS: [ ] (5)
1 - Single
2 - Married
3 - Divorced
4 - Widowed
9 - Unknown

[ ] (6) Do you receive welfare assistance?
1 - Yes
2 - No
9 - Unknown

[ ] (7) What is your highest level of education?
1 - Grade School Incomplete
2 - Grade School Complete
3 - High School Incomplete
4 - High School Complete
5 - Trade School Incomplete
6 - Trade School Complete
7 - College Incomplete or Complete
9 - Unknown

[ ] (8) How far do you usually live from the Zuni Hospital?
0 - 0-5 miles
1 - 6-20 miles
2 - 21-40 miles
3 - 41 or over
9 - Unknown

[ ] (9) How far do you usually live from the Field Clinic?
1 - 0-5 miles
2 - 6-10 miles
3 - 11-20 miles
4 - 21 or over
9 - Unknown

Does caring for children prevent you from coming to the Field Clinic or Hospital Clinic

[ ] (10a) Zuni Hosp. Clinic
1-Sometimes
2-Often
3-Never
9-Unknown

[ ] (10b) Field Clinic
1-Sometimes
2-Often
3-Never
4-Unknown

Does your job keep you from coming to the Field Clinic or Hospital Clinic?

11a	Zuni Hosp. Clinic	11b	Field Clinic
	1 - Yes		1 - Yes
	2 - No		2 - No
	9 - Unknown		9 - Unknown

Does the use of alcohol by any of your friends prevent them from coming to the Hospital Clinic or Field Clinic?

12a	Zuni Hosp. Clinic	12b	Field Clinic
	1 - Often		1 - Often
	2 - Sometimes		2 - Sometimes
	3 - Never		3 - Never
	9 - Unknown		9 - Unknown

Does the time you have to wait to see the doctor prevent you from coming to the Hospital Clinic or Field Clinic?

13a	Zuni Hosp. Clinic	13b	Field Clinic
	1 - Yes		1 - Yes
	2 - No		2 - No
	9 - Unknown		9 - Unknown

14	Do you understand why you have to wait to see the doctor at the Clinic?
	1 - Yes
	2 - No
	9 - Unknown

Do you feel uncomfortable when you see the doctor at the Zuni Hospital Clinic or Field Clini

15a	Zuni Hosp. Clinic	15b	Field Clinic
	1 - Yes		1 - Yes
	2 - No		2 - No
	9 - Unknown		9 - Unknown

If so, why?

Lack of privacy:

16		17	
	1 - Yes		1 - Yes
	2 - No		2 - No
	9 - Unknown		9 - Unknown

Crowded conditions:

18		19	
	1 - Yes		1 - Yes
	2 - No		2 - No
	9 - Unknown		9 - Unknown

Uncomfortable furniture:

20		21	
	1 - Yes		1 - Yes
	2 - No		2 - No
	9 - Unknown		9 - Unknown

Waiting time:

22		23	
	1 - Yes		1 - Yes
	2 - No		2 - No
	9 - Unknown		9 - Unknown

Other reasons:

24		25	
	1 - Yes		1 - Yes
	2 - No		2 - No
	9 - Unknown		9 - Unknown

Do you have a transportation problem getting to the Zuni Hospital Clinic or Field Clinic?

26a	Zuni Hosp. Clinic	26b	Field Clinic
	1 - Yes		1 - Yes
	2 - No		2 - No
	9 - Unknown		9 - Unknown

Have you or your children gone to a medicine man for health care within the last year and a half?

27

1 - Yes
2 - No
9 - Unknown

28

Do you get along with the people working in the Zuni Hospital Clinic or other persons working for the Indian Health Service?

1 - Yes
2 - No
9 - Unknown

Appendix 9

EPIDEMIOLOGY AND HEALTH SERVICES
MANAGEMENT COURSE (TC-70-4)
Desert Willow Training Center, Tucson, Arizona

COURSE STAFF

COURSE DIRECTOR

Irving H. Schlafman, San-Dir.
Chief, Management Training &
Field Assistance, DWTC
Tucson, Arizona

COURSE PRECEPTOR

Mr. Robert McKay
Deputy Director, Aberdeen
Area Indian Health Service
Aberdeen, South Dakota

STAFF ASSISTANT

Mrs. Vicki Shulock
Management Training &
Field Assistance, DWTC
Tucson, Arizona

Socio-Cultural Concepts	Nadine H. Rund, Ph. D. Training Consultant Management Training & Field Assistance, DWTC Tucson, Arizona
Management Principles	Harold Fearon, Ph. D. Chairman, Department of Management College of Business Admin- istration Arizona State University Tempe, Arizona
Epidemiology	Henry M. Parrish, M.D. School of Medicine University of South Dakota Vermillion, South Dakota
Management Gaming	Mr. Robert Marsland Area Chief of Training Phoenix Area Indian Health Service Phoenix, Arizona
Biostatistics	William Gaffey, Ph. D. Senior Biostatistics Consultant Pacific Medical Center San Francisco, California

Introduction to Critical Path Planning	Jerry Sanders, Ph. D. Department of Systems Engineering University of Arizona Tucson, Arizona
Health Planning	Mary F. Arnold, Ph. D. Professor of Health Planning Pennsylvania State University University Park, Pa.
	Mr. Charles Bunch Acting Chief, OPPE IHS Headquarters Rockville, Maryland
Field Study Design	Mr. Richard Coffey Operations Research Analyst, HPSC, HSMHA, IHS Tucson, Arizona
Albuquerque Area Liaison Officer	Mr. Gene McElyea Area Chief of Training Albuquerque Area IHS Albuquerque, New Mexico
Zuni, New Mexico, Service Unit	William Cumberworth, M.D. Service Unit Director
	Mrs. Roberta Arnold Public Health Nurse
Zuni Tribe	Mrs. Verna Nastachio CHR Supervisor

Appendix 10

ROSTER OF TRAINEES

April 13-May 1, 1970 TC-70-4

1. ANTONE, Ralph
CHR Coordinator
Papago Reservation
Sells, Arizona

2. BYRD, Janice L.
Chief Dietitian
PHS Indian Hospital
Tahlequah, Oklahoma

3. EMELIO, John L.
Chief, Adm. Svcs. Br.
Aberdeen Area IHS
Aberdeen, South Dakota

4. FELSEN, James D., M.D.
Service Unit Director
PHS Indian Hospital
San Carlos, Arizona

5. HAAG, JR., Walter M.
Career Fellow
Global Community Health
Washington, D. C.

6. HEIB, JR., Norbert P.
Radiological Consultant
PHS Indian Hospital
Gallup, New Mexico

7. HUGHES, Tillman H.
Chief, Pharmacy Service
PHS Indian Health Center
Poplar, Montana

8. IVEY, Gerald H.
Chief, Office of Native Affairs
Alaska Area NHS
Anchorage, Alaska

9. LaBATT, Ronald L.
Medical Technologist
PHS Indian Hospital
San Carlos, Arizona

10. LoGERFO, James P., M.D.
General Medical Officer
PHS Indian Hospital
Sells, Arizona

11. MATSUTANI, Osamu H., M.D.
Medical Officer
PHS Alaska Native Hospital
Barrow, Alaska

12. McCOLL, Margaret M.
Director of Nursing
PHS Indian Hospital
Tuba City, Arizona

13. MESTETH, Manuella
Public Health Nurse
PHS Indian Hospital
Crow Agency, Montana

14. NAKAMURA, Peter M., M.D.
Medical Officer
Alaska Native Medical Center
Anchorage, Alaska

15. OSS, Lowell D., M.D.
Field Health Physician
PHS Indian Hospital
Winnebago, Nebraska

16. PARKER, Kathryn
CHR Supervisor
Choctaw Tribe
Talihina, Oklahoma

17. PIATOTE, Melvin D.
Administrative Officer
Colville PHS Indian Health Center
Nespelem, Washington

18. RICE, Terrence L.
Chief, OPPE
Aberdeen Area IHS
Aberdeen, South Dakota

19. SHECKLETON, George F., M.D.
Medical Officer
PHS Indian Hospital
Schurz, Nevada

20. WALTER, Mildred O.
PH Nursing Supervisor
Portland Area IHS
Portland, Oregon

21. WINDISH, Alice May
Public Health Nurse
PHS Indian Hospital
Crownpoint, New Mexico

ROSTER OF TRAINEES

April 13-May 1, 1970 TC-70-4

1. ANTONE, Ralph
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Aberdeen, South Dakota

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Service Unit Director
PHS Indian Hospital
San Carlos, Arizona

5. HAAG, Jr., Walter M.
Career Fellow
Global Community Health
Washington, D. C.

6. HEIB, JR., Norbert P.
Radiologist Tech. Cons.
PHS Indian Hospital
Gallup, New Mexico

7. HUGHES, Tillman H.
Chief, Pharmacy Service
PHS Indian Health Center
Poplar, Montana

8. IVEY, Gerald H.
Chief, Office of Native Affairs
Alaska Area NHS
Anchorage, Alaska

9. LaBATT, Ronald L.
Medical Technologist
PHS Indian Hospital
San Carlos, Arizona

10. LoGERFO, James P., M.D.
General Medical Officer
PHS Indian Hospital
Sells, Arizona

11. MATSUTANI, Osamu H., M.D.
Medical Officer
PHS Alaska Native Hospital
Barrow, Alaska

12. McCALL, Margaret M.
Director of Nursing
PHS Indian Hospital
Tuba City, Arizona

13. MESTETH, Manuella
Public Health Nurse
PHS Indian Hospital
Crow Agency, Montana

14. NAKAMURA, Peter M., M.D.
Medical Officer
Alaska Native Medical Center
Anchorage, Alaska

15. OSS, Lowell D., M.D.
Field Health Physician
PHS Indian Hospital
Winnebago, Nebraska

16. PARKER, Kathryn
CHR Supervisor
Choctaw Tribe
Talihina, Oklahoma

17. PIATOTE, Melvin D.
Management Trainee
Portland Area IHS
Portland, Oregon

18. RICE, Terrence L.
Chief, OPPE
Aberdeen Area IHS
Aberdeen, South Dakota

19. SEGER, Frank D.
CHR Director, Cheyenne & Arapaho Tribes of Oklahoma
Concho, Oklahoma

20. SHECKLETON, George F., M.D.
Medical Officer
PHS Indian Hospital
Schurz, Nevada

21. WALTER, Mildred O.
PHN Supervisor
Portland Area IHS
Portland, Oregon

22. WINDISH, Alice May
Public Health Nurse
PHS Indian Hospital
Crownpoint, New Mexico

TC-70-4

FIRST WEEK

EPIDEMIOLOGY AND HEALTH SERVICES MANAGEMENT
IHS DESERT WILLOW TRAINING CENTER
TUCSON, ARIZONA

Course Director:
Mr. I. H. Schlafman
Course Preceptor:
Mr. Robert McKay

DAY/DATE	8:00 a.m.	9:00 a.m.	10:00 a.m.	11:00 a.m.	1:00 p.m.	2:00 p.m.	3:00 p.m.	4:00 p.m.
Mon 4/13	ORIENTATION Mr. I. H. Schlafman	SOCIO-CULTURAL IMPACTS ON HEALTH PROGRAMS N. Rund, Ph. D.		INDIAN INVOLVEMENT AND CROSS-CULTURAL IMPACTS N. Rund, Ph. D.	PRINCIPLES OF MANAGEMENT H. Fearon, Ph. D.			
Tues 4/14	PRINCIPLES OF EPIDEMIOLOGY H. Parrish, M.D.				EPIDEMIOLOGY PROBLEM-SOLVING H. Parrish, M.D.			
Wed 4/15	CLASS PICTURE 8:30 a.m.	TEAM LEADERSHIP/SUPERVISORY SKILLS GAMING Mr. R. Marsland			PRINCIPLES OF MANAGEMENT H. Fearon, Ph. D.			
Thurs 4/16	BIOSTATISTICS W. Gaffey, Ph. D.		INTRODUCTION TO CRITICAL PATH PLANNING J. Sanders, Ph. D. 10:00 a.m.-12:30 p.m.		BIOSTATISTICS W. Gaffey, Ph. D.	R & R		
Fri 4/17	BIOSTATISTICS W. Gaffey, Ph. D.				HEALTH PLANNING Mary Arnold, D. Ph./Mr. C. Bunch			
Sat 4/18	FIELD STUDY DESIGN AND DATA MANAGEMENT Mr. R. Coffey		FIELD STUDY BRIEFING AND CLASS CHAIRMAN SELECTION Mr. I. Schlafman		R & R			
Sun 4/19	LEAVE DWTC FOR AIRPORT AT 9:00 a.m.				ARRIVAL AT ALBUQUERQUE. DEPART FOR MOTEL. HOLIDAY INN P. O. Box 1057 GALLUP, NEW MEXICO 87301			

EPIDEMIOLOGY AND HEALTH SERVICES MANAGEMENT
ZUNI, NEW MEXICO

Course Preceptor:
Mr. Robert McKay
Indian Consultant

TC-70-4

SECOND WEEK

DAY/DATE	a.m.	p.m.
Mon 4/20	INTRODUCTION BRIEFING: ZUNI, NEW MEXICO--BACKGROUND, DEMOGRAPHY, HEALTH PROGRAMS, SERVICES, PRIORITIES, PROBLEMS TRIBAL OFFICE BUILDING, ZUNI, NEW MEXICO	1. CLASS DISCUSSION OF FIELD STUDY POTENTIALS 2. SITE VISIT Class Chairman
Tues 4/21	CLASS SELECTION OF FIELD PROJECT AND INITIATION OF STUDY	1. DEVELOPMENT OF HYPOTHESES AND OPERATIONAL DEFINITIONS 2. STUDY DESIGN 3. CRITICAL PATH PLANNING
Wed 4/22	1. STUDY DESIGN--CONTINUED 2. DEVELOPMENT OF OUTPUT TABLE FORMATS 3. LITERATURE REVIEW/IDENTIFICATION OF RESOURCE NEEDS	1. FORMS DESIGN, FORMS TESTING, SAMPLING, FIELD LOGISTICS 2. FORMS MODIFICATION 3. FORMS REPRODUCTION
Thurs 4/23	INITIATION OF FIELD STUDY	FIELD STUDY--CONTINUED
Fri 4/24	FIELD STUDY--CONTINUED	FIELD STUDY--CONTINUED DATA CODING AND PREPARATION FOR PROCESSING
Sat 4/25	DEPART FOR ALBUQUERQUE, NEW MEXICO	PLANE DEPARTURE FROM ALBUQUERQUE TO TUCSON
Sun 4/26	R & R	R & R

EPIDEMIOLOGY AND HEALTH SERVICES MANAGEMENT
DWTC, Tucson, Arizona

TC-70-4

Course Preceptor:
Mr. Robert McKay

THIRD WEEK

DAY/DATE	a.m.		p.m.
Mon 4/27	1. CLASS DEVELOPMENT OF FINAL REPORT FORMAT 2. ORGANIZATION OF CLASS TASKS AND SCHEDULE FOR THE WEEK. GROUP ASSIGNMENTS. Class Chairman		1. REVIEW OF RAW DATA 2. INITIATION OF REPORT TEXT 3. INITIATION OF DATA SORTS (HPSC)
Tues 4/28	1. REPORT STATUS 2. REPORT DEVELOPMENT 3. DATA SORTS (HPSC) 4. INITIATION OF STATISTICAL ANALYSES		1. REPORT STATUS 2. REPORT DEVELOPMENT 3. STATISTICAL ANALYSES
Wed 4/29	1. REPORT STATUS 2. REPORT DEVELOPMENT 3. TEXT EDITING		1. REPORT STATUS 2. REPORT DEVELOPMENT 3. TABLES/GRAPH PREPARATION
Thurs 4/30	1. CLASS REVIEW OF REPORT ANALYSES 2. DEVELOPMENT OF MANAGEMENT RECOMMENDATIONS		1. REPRODUCTION OF REPORT 2. ORGANIZATION AND DEVELOPMENT OF ORAL PRESENTATION
Fri 5/1	PRACTICE PRESENTATION OF REPORT ("DRY-RUN")	10:00 a.m. FORMAL PRESENTATION OF PROJECT REPORT TO REVIEW BOARD	COURSE EVALUATIONS CLOSING ACTIVITIES (Course Completed by 2:30 p.m.)

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